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DELIVERED IN THE UNIVERSITY
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BY

SIR CHARLES BELL, K. G. H.

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PROFESSOR OF SURGERY IN THE UNIVERSITY OF EDINBURGH ;
LATE PROFESSOR OF ANATOMY AND SURGERY TO THE COLLEGE OF SURGEONS
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INSTITUTES OF SURGERY.

CHAPTER I.

THE DISEASES OF THE TESTICLE, AND THE OPERATIONS PERFORMED FOR THEIR RELIEF.

THIS subject follows naturally after those diseases which we treated of towards the end of the first volume; the diseases of the testicle being intimately connected with those of the urethra.

The student of surgery would do well carefully to review the whole anatomy and relations of the testicle in taking up this division of our subject.

With the original seat of the testicle the sympathetic pains of this organ are related; with the coats the subjects of hydrocele and hernia: by considering the relations of the epididymis and vas deferens with the urethra, we ascertain the nature and origin of many of its diseases, and are enabled to distinguish local from constitutional diseases of the testicle.

Nervous Affections of the Testicle.

The nerves of the testicle being of the class of visceral nerves, the sensibility of the gland is peculiar as well as exquisite. A blow on the testicle with a tennis-ball causes the patient to faint like a blow on the stomach. The testicle, probably from the same cause, is often the seat to which pain is referred, when there is no disease in it but only remote irritation. It will be found to be so tender, that the patient dare not let the clothes touch it, and yet neither swelled nor in any other way diseased.

I have had a patient come round from the west of England, and landed from the Thames at the Adelphi Hotel, unable to bear a carriage or to walk, from sensibility of the testicle, while there was no visible or tangible disease of the gland.

This sensibility of the testicle, with retraction of the cremaster muscle, is often attendant on a morbid state of the urethra, and removable by the use of the bougie.

The patient has submitted to castration, a sad proof of the severity of pain. But that a surgeon should perform the operation a second time is remarkable: the source of pain not being in the part, it cannot be remedied by amputation!

The scrotum is often the seat of this morbid sensibility; that is to say, like the testicle it is affected by irritation of the bowels or of the internal organs. The pain felt is of a scalding sensation, and the thigh generally partakes in it. In the case of the scrotum and thigh being thus affected, the irritating

matter is lodged in the lower part of the colon or the rectum.

In these cases purging is of service, *e.g.* with the compound powder of scammony and the pulv. hydrarg. cum creta,—castor-oil with ol. tigii,—enemata of tepid water. Cicuta with the blue pill is given as an alterative.

Hernia Humoralis—Swelled Testicle from irritation at the neck of the Bladder.

In this case there is neither metastasis nor translation of inflammation. It is occasioned by the inflammation of gonorrhœa spreading to the *caput gallinaginis*, and mouths of the seminal vessels. It may also be occasioned by a rude operation with the catheter or bougie. It sometimes follows lithotomy. Accordingly, the first symptom is not a soft swelling of the testicle; but if you are observant, you will find the patient complaining of a pain in the spermatic passage, a sensation of fulness and of pain when he stoops, and an alarm that he has got a rupture. The next thing you observe is a protrusion and extreme sensibility of the globus minor, the lower part of the epididymis, and at the same time you may feel the vas deferens like a cord.

It is not difficult to account for *strangury* sometimes attending this complaint, for, in truth, the swelled testicle is the result of inflammation running by “continuous sympathy” along the seminal vessels. The inflammation is traceable, although the effect is not so remarkable, unless where the vessels are accumulated in masses, as in the epididymis or testicle.

The body of the testicle swells with great pain and tenderness, and in these circumstances the patient may lay his account with three weeks’ confinement.

By proper treatment it subsides, leaving some degree of hardness on the epididymis. The formidable consequences which sometimes arise from this very common case are, the total wasting of the testicle : or such a scirrhusity on the epididymis as to obstruct the duct. The inflammation kept up by the continuance of the original cause lays the foundation of many of the affections which we have to describe.

Treatment.—The inflammation may be cut short by leeches and fomentation to the perineum, and a vomit. Afterwards leeches and fomentation to the testicle, then a tepid lotion with cerussa acetata and opium ; the testicles to be suspended, and the horizontal position strictly enjoined ; laxatives, and, in pain, Dover's powder, or pil. saponis cum opio.

In the chronic condition of the swelling, fatus of the muriate of ammonia, the camphorated mercurial ointment, and ung. hydriodatis potassæ, with an alterative pill.

Do not take the advice to bring back discharge into the urethra, by using a stimulating bougie, for the practice is founded on a wrong theory.

Sclerocele.

Mr Ramsden of St Bartholomew's Hospital used the term *Sclerocele* as indicating a chronic enlargement of the testicle, resulting from a continued lesser degree, or chronic state of inflammation in the urethra.

Mr Abernethy claimed the observations of Mr Ramsden. It is important to us only as giving additional authority to the correctness of the pathological principle.

I feel disappointed that late authors and lecturers have done so little justice to this author and to the subject. I must attribute this to a misconception of its real importance.

The most formidable appearances of the diseased testicle are referable to this chronic inflammation. It is enlarged, heavy, knobby, and in part surrounded with water. The pain, too, is lancinating, and yet all yields to treatment which destroys the irritation of the urethra. To this end, the proper use of the bougie must be added to other means, as blisters, and the seton in the scrotum, and the alterative mercurial course.

Scrofulous Tumour in the Testicle.

We distinguish the strumous tumour of the testicle from the more formidable disease of the body of the testicle. A pale, firm scrofulous tumour occupies the substance of the testicle, and presses aside the tubuli, and at length destroys the whole gland.

When the body of the gland is thus affected, there is reason for its removal, as the organ is useless; although the disease has nothing malignant in its nature, yet the operation saves the patient from a tedious local disease, and distress of body and mind.

Scrofulous Fungus.—In the sclerocele, the swelling is principally in the surrounding coats of the testicle. But the body of the testicle is liable to inflammation and suppuration in the strumous constitution.

In the sclerocele, and in all the affections of the testicle originating in the urethra, you find the epididym-

mis indurated. But the inflammation of which I now speak is more constitutional, and commences in the body of the gland, and not in the appendages. Being strumous, it is very apt to be excited when the constitution has been debilitated by courses of mercury.

The inflamed substance of the testicle makes its way through the tunics, attended with a dark coloured inflammation. It incorporates with the integuments—they inflame, open, and discharge some fluid, after which the substance of the testicle rises in a fungous tumour. The appearance now is very formidable, and like a bad carcinomatous disease; but it is comparatively innocent.

We owe our more perfect knowledge of this disease to Mr Lawrence, who shewed that it did not call for castration. He cuts off the fungus, after which it cicatrises. I have generally treated it by escharotics, dry dressing, and strapping, which subdue the fungus, and the integuments close over it.

Proper medical treatment will be conjoined. Bark and soda, and sarsaparilla and iodine.

Hydrocele.—Although the term means generally a watery tumour, it is confined to a collection of fluid around the testicle.

Although a consequence of the debility which follows inflammation, it is generally discovered by the mere size of the part, being unattended with pain. The swelling becomes tense, of a pyramidal shape, without discoloration, or at most with a slight enlargement of the veins of the scrotum.

You understand the reason of the peculiar shape of hydrocele of the testicle. It begins by a collection of fluid within the tunica vaginalis; it begins therefore below, and as it extends upwards, it is embraced and moulded by the

action of the cremaster muscle. You recollect also, that the fluid is anterior to the body of the testicle, and that the patient is sensible of the difference of sensation, when you press or tap on the anterior surface of the tumour, and when you press behind where the body of the testicle is touched.

As the hydrocele enlarges, it is bound down by transverse and irregular bands, and becomes tense as a tennis-ball.

You have to distinguish it from other diseases. The formidable fungous tumour of the body of the testicle most resembles it. When hydrocele has acquired a great volume, and shot up with a conical point into the abdominal ring, it resembles hernia. It is often combined with hernia.

Its history, beginning below ;—its transparency,—its peculiar shape, the testicle being behind, firmer, and giving pain on pressure,—the tumour suffering no change by the horizontal or upright position,—the irritation of the neck of the bladder,—the countenance indicative of no disease ;—these are the signs of hydrocele.

In very old hydroceles, the tunica vaginalis becomes much thickened and even ossified.

Congenital Hydrocele.—In children, while the communication between the abdominal cavity and the vaginal cavity is still open, fluid collects in the testicle.

In this case you foment with the muriate of ammonia, liquor ammoniæ acetatis, and tinctura lyttæ. Failing to excite absorption, press up the fluid into the abdomen, and assist nature in its tendency to produce adhesion in the neck of the sac by a compress.

You ought to perform no operation by puncture,

as it would be equivalent to a wound of the abdomen, while the passage remains open.

I have found a hydrocele as a distinct sac attached to the epididymis; no doubt a consequence of the inflammation of that body, and in all respects like the next variety.

Hydrocele of the Cord.—We find suppuration in the vas deferens, which marks how subject it is to inflammation, and how it is propagated; and this inflammation, I am inclined to believe, causes water to collect on the cord. Sometimes it is in one sac; sometimes in a string of vesicles. These cells often communicate, and part being exterior to the ring and part within, they sometimes puzzle us; as the tumour may ascend when the patient is in the horizontal posture, and again descend when he is erect.

But there is another form of hydrocele of the cord, which appears most frequently in children—a distinct sac. This is probably in consequence of some defect in the descent of the testicle.

Treatment of Hydrocele.—When the accumulation of water on the testicle has been preceded and accompanied by irritation in the neck of the bladder and slight stricture, these should be removed, and the usual means taken to excite absorption. As to the operation, there is, 1. the palliative operation; and 2. the radical cure.

The palliative operation is simply the puncture of the sac to let out the fluid, which, however, soon collects again. The radical operation is to evacuate the fluid, and to excite such an action in the surface

of the sac as shall effectually prevent the return of the effusion.

I remember to have assisted at the operation by incision. This was the old practice. It was a severe but effectual method. A decided cut was made through the integuments and sac. The lips of the incision were kept apart by oiled lint, until the cavity was closed by process of inflammation and adhesion.

Another operation, now obsolete, is that by seton. The tumour was punctured with the trochar, and the water drawn off; a straight canula was passed through the larger one, and carried to the upper part of the sac. There being pressed against the interior of the sac, a needle with a seton was introduced through it, and brought out above. The canula being withdrawn, the skein of thread was left running in the whole length of the sac.

Another method was by caustic. The slough being formed on the scrotum, it was cut into, and the sac opened and kept open till the cavity consolidated.

The operation by injection is that which you will be called upon to perform; and, simple as it is, I have seen it so often ill done, and so often fail of its object, that I entreat your attention to one or two circumstances.

Cline advised a drachm of sulphate of zinc to a pint of water as the injection. I have seen this produce alarming and unnecessary pain. Port wine and warm water, in equal parts, is an effectual and manageable injection. Let it be tepid when you use it. You modify its effect either by increasing the strength of the injection or keeping it longer in the sac.

See that your apparatus is complete, and that the stop-cock and tubes fit, and are easily separated.

Fill the injection-bag to the lip, and let there be no air; turn the stop-cock, and lay the bag in a basin of warm water, to be handed to you when you

want it ; for, having made the puncture, your hand should not be withdrawn until the operation is finished.

Take your lancet and make a puncture through the tough integument, rather a slight incision, avoiding the cutaneous vein.

Grasp the tumour, so that you compress the sides, and so deepen the quantity of water in front of the testicle. Plunge your trochar perpendicular to the surface, until you have fairly penetrated the sac ; then depress your hand, and carry the point of the instrument upwards in the long diameter of the sac, by which you avoid touching the surface of the testicle.

Do not pull out the stilette, but rather push off the canula, by which you make sure that it is within the sac.

The fluid being discharged, your good sense will direct you whether the testicle is in a state to proceed. If you find it larger than you had reason to believe, tender on pressure, and irregular, you had better desist, and remain satisfied with the palliative remedy, and set about diminishing the morbid action in the gland. But if all be right then proceed.

Insert the nozzle of the injecting-bag into the canula ; take care that the end of the canula be not pressed against the body of the testicle ; and take care that, if there be a hole in the canula, the hole is past the edge of the sac. (For I have seen the cellular substance injected from the hole of the canula opening upon the cellular membrane, while the mouth was stopped by pressure against the testicle.)

The sac being moderately filled, you wait patient-

ly, or withdraw the nozzle of the bag, leaving the stop-cock in the canula. You let the injection remain until the patient feels the stimulus; but mark that he feels it in the loins, not in the part; another instance of those sympathies I bade you observe. From five to ten minutes by the watch will suffice.

When the operation is clumsily and ill performed, the wine and water get into the cellular membrane of the scrotum; and inflammation and distress and sloughing are the consequences.

There is no necessity for powerfully distending the sac in this operation. Remember that the cremaster muscle may become spasmodically affected, and contract so powerfully that, in a very full sac, the injection may be forced into the cellular membrane.

You should inform the patient that the parts will swell, and that this is necessary to success; or on the third day he will be much disappointed in finding the tumour as large as before!

If the tumour rises, keep him on the sofa, and enjoin abstinence. If the swelling be not sufficient, let him have more liberty and live as usual.

Finding that the first effusion of fluid kept the surfaces apart, and was not absorbed, whereby the operation failed, I have passed a small piece of bougie through the canula, so that it remained in the wound when the canula was removed. Next day I have withdrawn the bougie, and squeezed out the serum. This insures the success of the operation, but it may produce too much inflammation.

In hydrocele of the cord, I would prefer puncture or incision to injection; or you may draw through a seton along the cells; or puncture and evacuate the clear fluid, and then seize a part of the sac and snip it off.

You will hear it debated whether, in the successful injection of the hydrocele, the effect is produced by adhesion, or merely by exciting a healthy action

in the sac. In two instances, where I had an opportunity of examining by dissection, there was adhesion; and the medium of adhesion had changed into a perfect cellular tissue.

Hæmatocele is a tumour of blood within the coats of the testicle. If the surgeon touches the testicle in tapping, the blood flows into the sac, distends it, and presses back the body of the testicle. Some have imagined that blood may be poured out into the sac, independently of a puncture of the trochar. They think that the tension being taken off, the veins pour out blood. *Hæmatocele* may be produced by a blow.

The more formidable case of *hæmatocele* is that connected with a fungous spongy tumour of the testicle.

Varicocele.—This is a varicose state of the veins of the spermatic cord. It arises directly (like the varicose state of the saphena vein) from the distention of the vein, and consequent loss of the action of the valves. The tumour is very peculiar, and not to be mistaken—an elastic woolly mass, soft and compressible.

These veins swell in the erect, and fall in the recumbent posture. The mass is largest below or near the testicle. You feel that the softness or compressibility is derived from the pressure of a column of fluid. It is attended with a dull heavy pain, which the patient says he would willingly change for something more severe and sharp! It is sometimes attended with a diminution of the body of the testicle.

Mr John Bell was wont to operate on these veins, to ex-

pose them, include them in a ligature, and to cut off the projecting clusters. I have attempted to cure the complaint, by exposing the cord, and producing inflammation and condensation of the cellular membrane around the veins. But I advise no such operation. The application of a heated wire is in all respects a barbarous practice; it comes down to us from ignorant times, and is sanctioned by no just principle.

Avoid the cause, which is undoubtedly constipation and straining. Suspend the testicle, and contrive that the cord be compressed at the same time, at its exit from the ring, and in a sufficient degree to prevent the swelling of the veins. It is the gravitation of the blood, and the distention of the veins, which cause the pain; if this compression be properly done, it effectually relieves the pain.

Formidable Tumour of the Testis.—The true carcinoma of the testicle is a rare disease. It is difficult to distinguish it from sclerocele. The weight, irregularity, knobbiness, and stinging pain, are all accompaniments of the more innocent complaint. The uniform appearance of the tumour is owing to the fluid that accompanies the disease of the body. Through that fluid you will discover the hard and painful tubercle. It is this condition of the parts which, in the older authors, has the term of Hydro-sarcocele. The soft cancer, the pulpy testicle, is a frequent disease, and a fearful one.

The pulpy testicle is of the nature of fungus hæmatodes.—This disease attacks the body of the testicle. It produces a uniform tumour, an oblong sphere. It is elastic. It wants the accompaniments of hydrocele. I have been in consultation with our most experienced surgeons, when three opinions were expressed:—"It is water"—"It is blood"—"It is worse than all, it is a pulpy testicle, and the patient's life is measured." For, on looking to the

countenance, I saw that sallow yellow hue which accompanies this most formidable disease. The body of the testicle is first affected, then the epididymis, then the cord; the latter adheres to the pubis; the glands of the groin, too, are affected. By deep pressure, you can feel the cord on the psoas muscle. The accompanying symptoms are, uneasiness in the loins—sensations down the thigh—œdema of the extremity—the countenance sallow; for the rest, vomiting and diarrhœa, hiccough, and abdominal pains and profuse perspiration. The disease has extended to the viscera. It will terminate life in a few months.

With all these formidable characters, when in an early stage it has been taken for hydrocele, and punctured, the puncture heals.

Extirpation of the Testicle.——This is an operation seldom performed in our hospitals. I remember when it was a very common operation; and this change I attribute to Mr Lawrence's paper, and to the sclerocele, as an induration from irritation, being better understood.

The cord is unnaturally thick. Is it the progress of disease, or the mere consequence of the bulk and weight of the testicle?

Mr Pott, we are told, ran a trochar into the tumour before commencing! This marks how imperfectly the pathological principle was understood in his time. It was to avoid cutting off a hydrocele with thickened coats!

Our incision is made in the length of the scrotum, and the cord dissected bare. The tenaculum is put through the cord, and given into the hand of an assistant, who at the same time, taking the cord be-

tween the finger and thumb, compresses it. The surgeon dividing the cord, dissects it down, and draws the tumour from the scrotum, which is quickly performed.

Now, taking the cord in his fingers, he lets the artery spring, and he takes it neatly up with his forceps: he loosens his hold again, the artery of the epididymis springs, and he takes it up in the same careful way.

We find in old authors a fear expressed, that the cord being cut across, it may be drawn up into the belly by the action of the cremaster.

A heavy tumour being cut off from the cord, the cord will certainly be drawn up, but this will not take place if you support the tumour before cutting the cord.

As to its being drawn up into the belly, you know that to be nonsense, since it does not go into the belly! nor can the cremaster muscle draw it farther than its own origin.

It is stated that a patient has died of hæmorrhage from the cord being so drawn up. Then they must have forgotten their anatomy, since, if such an accident were to occur, you need only to slit up the spermatic passage!

However, it is to avoid this that we are advised to put a gross ligature through the cord. This I shall not object to. But most pointedly, do I object to that ligature being considered as a *ligature d'attente*, to be tied if the hæmorrhage should occur; for a ligature on the spermatic cord is attended with insufferable pain.

See that you secure the vessels of the scrotum, for they may bleed in the night, and distend the scrotum with coagulum..

The parts are simply brought together, and supported with compress and T bandage.

(See the *Classification of Tumours*.)

We may here notice the DISEASES OF THE SCROTUM.

I have already observed that the scrotum is pecu-

liarly exposed to nervous pains,—to sensations, which have not their source in the integument itself or the contained gland, but to intestinal irritation. This morbid sensibility is sometimes excessive.—(See *Bell on the Nerves, Appendix*).

Itching of the scrotum and neighbouring parts is a frequent complaint. In all these cases, too, look to the deeper cause, which in this instance is disordered function of the lower intestines, and then to the alleviation by external application. Make the patient bathe in a bath of bran and warm water,—cover the scrotum with an oiled silk bag,—use a lotion of the liquor plumbi with cream. For eruptions, the zinc ointment: for irritation, the hydrocyanic acid in mixture of the bitter almond and the oxymuriate of mercury is recommended, but I avoid using poisonous lotions.

The terms circocoele and varicocoele, and hernia varicosa, are sometimes applied to the enlarged veins of the scrotum, cutaneous veins, as well as to those of the spermatic cord. Be at least aware that these cutaneous veins are subject to enlargement—that this distention is attended with an uncomfortable aching pain. Dashing of cold water, and the suspensory bandage, and free bowels, are all that is necessary to be done here.

These veins are burst by falls or shock against the pommel of the saddle. A species of thrombus is the consequence. I have noticed the manner in which the scrotum is injected with blood after operation.

The scrotum is subject to a peculiar form of cancerous disease, called the *Soot-wart*, (See Pott's works), Chimney-sweep's Cancer. I observe Mr Syme says it is not known in Scotland. I have seen it only in the hospitals of London, but I must imagine this to be accidental. The sore begins on the

lower part of the scrotum. Unfortunately a sore of the skin, if there be any thing malignant in it, is very soon propagated to the neighbouring lymphatic glands—and so it is here. The glands of the groin are early affected, and when they partake in the disease the patient is lost.

The disease makes progress in two ways; it is propagated through the absorbing system, and the sore eating deep infects the testicle. When the testicle becomes enlarged and firm, and adhering to the diseased scrotum, the spermatic cord, the glands of the groin, and viscera of the abdomen, are infected, and the patient is past all hope. ☞ Early excision of the diseased skin is the practice recommended. But even that gives no security.

The scrotum is subject to morbid enlargement, and I have seen it resting on the ground an enormous mass! When the growth is excessive, there is no reason why it should not be removed. The disease is not malignant; it is a mere hypertrophy. The objection is in the size of the mass, and the consequent danger of hæmorrhage.

Were it to be performed, I think the aim of the operator should be to lay bare the testicles, and seeing that they and the penis were safe, to cut with determined strokes, an assistant being prepared to grasp the bleeding surface.

As to palliating, be it remembered that it is at last the pendulous condition of the parts that produces the rapid effusion and growth; therefore, the mass ought to be supported in a sling, and subjected to regular process of compression.

The scrotum, as a depending part, is the seat of anasarca. It may be necessary to puncture it with the needle or lancet.

I drew up the following note as part of a report

on Cancer, required by the Governors of the Middlesex Hospital.

CANCER OF THE TESTICLE.

The cancer, or true carcinoma testis, is a rare disease. The cases sent into the hospital as such, have been cases of scirrhus; that is, of induration of the coats of the testicle, or of irregular tumours, or cysts attached to the cord and epididymis.

The soft cancer, pulpy testicle, or cephaloid tumour of the testicle, have been more common; however, the cases presenting in hospital practice have not borne the same proportion to those occurring in private, as in other formidable diseases.

Those suffering from this disease, or those diseases, if they be distinct, have died; indeed the death has not properly been attributable to the disease of the testicle. The fungus testis has been the outward or visible sign of a more general diseased state of the viscera.

This disease, in my opinion, belongs to the scrofulous constitution. It has shewn itself in persons of a dark ruddy complexion, and black hair.

It has most frequently occurred in men about fifty years of age, although I have preparations exhibiting the disease in young people.

It has not been traced to direct injury, or to irritation in the bladder or urethra; and the examination, after death, has shewn a disposition in the viscera and lymphatic glands, and even in the lungs, which could not be traced as a consequence of disease in the *testis*.

It is distinguished—1. by beginning in the body of the gland; 2. by the elasticity of the tumour; 3. by its greater regularity of form than in the tumour of hydrocele; 4. by the enlargement of the veins of the scrotum—(they are numerous, turgid, and distinct, not varicose); 5. by the tumour having no transparency; 6. the body of the gland is not to be distinguished apart from the tumour; 7. the peculiar sensation at the back and lower part, which marks to the patient the presence of the body of the gland in hydrocele, is not experienced here.

Prognosis—in the highest degree unfavourable. The only hope is, that we have mistaken the nature of the disease. To ascertain this, the surgeon conceives himself at liberty to use the lancet; and when, instead of water or liquid blood, there is forced out a soft brainlike matter, the case is of the worst character.

It resembles *hæmatocele*; so, if the condition of the veins on the surface do not mark the difference, a puncture will ascertain the nature of the swelling.

It is distinguished from the scrofulous testicle by its uniform elasticity, and by the absence of all caking or irregular hardness of the integument.

When in the advanced state of the disease, and when the tumour is about to burst, it has some resemblance to the suppurative state of the scrofulous testicle; yet an experienced surgeon will detect it by the smooth and elastic swelling of a part of the tumour, accompanied with a dark brownish-red colour.

When it breaks a bloody fluid exudes, but the tumour does not immediately subside, as on the evacuation of the matter from a suppurating testicle.

Sometimes this partial enlargement, with dark and glazed skin, will subside and shrink, without breaking; and another part of the tumour will assume the appearance of ripeness in the same manner.

When the tumour becomes large, and shoots up into the abdominal ring, it then receives an impulse from coughing, which might betray the surgeon into the belief that it was a hernia.

I have seen it mistaken for hydrocele,—a scrofulous testicle,—a hæmatocele,—a hernia.

When the abdomen becomes swelled and tense, shewing that effusion has taken place, then we have to suspect that the disease has affected the lymphatic glands, or the viscera of the abdomen. The patient will not long survive this condition.

The *chimney-sweepers'* cancer has not been seen in this hospital in the course of many years, with the exception of one case in 1823, when the glands of the groin became affected, and ulcerated, and at length opened the femoral artery!

The scrofulous suppurations of the body of the testicle, attended with rose-like granulations, have frequently assumed the appearance of cancer; but they have yielded to the caustic and compression, and have sometimes been treated by the excision of the fungus.

In some cases, this form of disease has followed a course of mercury, a scrofulous diathesis having been the consequence of the protracted use of this medicine.

CHAPTER II.

OF HERNIA.

HERE a grave duty is imposed on the surgeon. We have a class of accidents that terminate fatally if assistance be not promptly given. When the utmost danger threatens, the patient may be saved by a skilful hand. But that skill and the promptitude necessary on the occasion, must be acquired by much diligent study and some experience.

Certain principles must be laid down.

I limit the subject to the escape of a bowel,—a protrusion from the abdominal cavity.

Study then the inflections of the peritoneum, and the quality by which it shifts and accommodates itself. Consider its nature as a serous membrane subject to inflammation and ready adhesion,—how it expands and how it thickens.

Observe all the passages through the abdominal walls by which a bowel, carrying before it the peritoneum, can escape, and then proceed to the surgery.

The varieties are,—

1. *Hernia through the spermatic passage.*—Inguinal hernia,—Bubonocoele,—internal-oblique,—ventro-inguinale or direct,—scrotal (oscheocoele),—congenital.
2. *Under the crural arch.*—Femoral or crural hernia (merocoele).
3. *By the umbilicus.*—Exomphalos or omphalocele, or umbilical hernia.
4. *From any other part of the abdominal wall.*—Ventral hernia.

5. *Internal hernia*.—Through the ischiatic notch,—through the foramen ovale,—through the diaphragm,—hernia in the vagina,—hernia in the perineum.

Peritoneal Sac of the Hernia.

The bowel breaking through the cellular connections, and escaping through the passage of the abdominal wall, always carries the peritoneum before it ; and the peritoneum variously affected by this violence, forms the inner covering or proper sac of the hernia. You must have observed how readily the peritoneum shifts and is distended,—in pregnancy, ascites, and the natural movements of the viscera, so with more or less violence, it now passes out of the abdominal walls to invest the protruded parts.

In a recent bubonocoele, it has its natural appearance ; in an old scrotal hernia, it acquires density and substance very different from its original state. In a congenital hernia it is fine and thin. In an umbilical hernia it is irregular, and in part absorbed. In a femoral hernia it is so fine that the operator thinks he touches the gut when it is still invested with the sac !

Nor is the peritoneal sac always the same throughout. It is often thin at one part, and thick at another ; and these changes, from the natural appearance of the peritoneum, must be attributed to the degree of pressure or violence which attend its displacement. It is above all necessary to notice, that, where it is embraced in the narrow passage or neck of the hernia, it is often condensed in a manner unlike its original condition ; and that the effect of inflammation and

pressure upon it, is to make it capable of strangulating the intestine, and consequently puts us under the necessity of dividing it in the operation.

The mouth of the sac being thus condensed, when the hernia is further protruded, and the sac stretched, it produces an inequality in the tumour, by dividing it with a band in the middle.

All this I had to contend for, long before the publication of Mr Lawrence, or M. Cloquet. The “stigmata”—“fibrous edge”—“thin cutting edge”—of the sac, need not have been quoted as the observation of a foreign pathologist.

A double sac is a rare occurrence, but it takes place in this way: The neck of the original sac contracting and adhering, without the proper outlet of the muscles or their tendons being also strengthened, a new protrusion of the intestine causes a further shifting of the peritoneum, and a new portion is pushed down within the original sac.

Condition of the Intestine.

Here is another subject which I found quite neglected, touching a most important point of practice—the distinction of *Incarceration* and *Strangulation*.

For the most part a rupture forms slowly; there is a certain progress made before the case is declared by external tumour. In the case of bubonocoele, a finger-like process of the peritoneum is pushed through the spermatic passage by the omentum or intestine; which parts are in all probability protruded and withdrawn many times before they burst from their natural boundaries. That this takes place in some cases I have ascertained by dissection.

When the intestine is protruded into a narrow passage, there is nothing to prevent its being withdrawn on the next peristaltic convolution of the gut. It is when it escapes from the narrowness of the aperture that it swells up, and cannot be withdrawn. It is this *escape from pressure* which should chiefly attract your attention. It explains every thing.

I was wont, at lecture, to make a noose, and push a piece of intestine through it. It was easily withdrawn; but when the flatus was pushed into the portion within the noose, it could not be withdrawn; thus shewing that it is the distention of the gut that causes it to be retained.

Something of the condition of the gut will, therefore, depend on the passage through which it escapes. For example, when the intestine escapes under Poupart's ligament, the crescentic arch causes it to take a very acute turn; and the intestine beyond being permitted to fill, and being at the same time drawn by the action of the gut within, it comes immediately into a dangerous condition. If, on the contrary, the passage is wide and long, and does not terminate abruptly outwards, so as to let the gut expand itself, it does not suffer, and at any time may be easily reduced.

The bladder of urine is sometimes in the hernia; but no one ever heard of a strangulated bladder; because the intestine strangulates itself. Fully to comprehend this subject, you must draw a distinction between *irreducible*, *incarcerated*, and *strangulated intestine*.

The intestine may be *irreducible* from adhesion to the peritoneal sac. The mass protruded may be so large and so conglomerated, that it cannot be reduced, or, if reduced, cannot be retained.

But incarceration is a different condition. When the portion of intestine escapes, and is freed from pressure, the flatus and fluid contents accumulate within it, so that there is an angle of reflection made by the intestine. A certain difficulty in the return of the blood produces turgescence of the coats of the intestine; and finally, mucous secretion is poured into the cavity of the intestine. These together give to the portion included in the sac a bottle shape, and make it difficult to reduce it. In order to its reduction, or, as it is termed, to the operation of the *taxis*, it must be compressed, diminished in its bulk, and the flatus and mucus squeezed from it.

But the distention by mucus and flatus may be so great, and the angle between the body and neck so acute, that the matters contained cannot be carried back into the canal within the abdomen. The canal is consequently obstructed; this causes the symptoms which authors ascribe to strangulation. The intestine in the sac is not strangulated, the circulation is still free; this portion may live, and the patient may survive for weeks, suffering the while all the consequences of obstruction of the bowels.

The case in which the symptoms of danger are present, and yet the patient survives them, is,—where the intestine is surrounded by the omentum; for then, while the bowels are obstructed and the symptoms present, the intestine is supported and protected.

The secretion of the sac does sometimes produce a similar effect; for the secretion of serum from the peritoneal sac, and from the exterior surface of the intestine, so fills the sac, and compresses the in-

cluded intestine, that it is not permitted to fill, and is not therefore strangulated.

Strangulation is another stage—another condition altogether. It is that state where the neck of the intestine is so sharply compressed, that not only the contents of the intestine cannot pass, but the veins are compressed—the circulation in the portion of the gut is stopt. How long, then, may a man live with *strangulation*? Suppose I take up the last work on the subject—the last authority—I find, “I succeeded easily in reducing the hernia, which had been strangulated two days.”—(Tyrrel.) Mr Lawrence speaks of a slow strangulation. Sir Astley Cooper says, if he had hernia strangulated for six hours, he would have the operation performed. Professor Syme says, “Mortification rarely takes place sooner than eight hours, or later than eight days.” All this is very loose, and arises from not distinguishing the cause of symptoms, and the difference between obstruction to the canal, and obstruction to the circulation in the portion of intestine within the hernia.

It was in attempting to decide how long a piece of intestine would continue without circulation in it, and recover, that I found the ligatures carried into the canal, and the animal recover without apparent suffering!

I cannot say how long an intestine will live after the circulation is stopped in it; half an hour would, I conceive, determine the matter.

Now you understand, what by cases I long since proved, that the violence of symptoms of strangulation is no criterion to judge by; that this depends on the obstruction to the descent of the contents of the intestine, and not on the state of the intestine

in the sac ; and that with the same symptoms, one patient may live for five days, and another have his fate determined in as many hours.*

* On this subject you may read a paper by Sir Everard Home (*Transactions of a Society for the Improvement of Medical and Surgical Knowledge*, vol. ii.) Home had great influence in forming the opinion of the profession at one time. His ideas are incorrect and confused in a painful degree. He ascribes the difference in symptoms which are to decide our practice, to the state of the intestine included in the sac. For example, "When the stricture is only sufficient to compress the intestine, and to prevent the contents from passing through the strangulated part, there is vomiting, hiccough, thirst, and general uneasiness," &c. "When the stricture is in so great a degree as to produce inflammation on the compressed part of the gut, the symptoms come on immediately," &c. &c. "When the stricture is so tight as to obstruct the circulation of the blood in the part, all these symptoms are met with in the greatest degree," &c. This is very vague.

By such statements and such opinions, the principle which is to govern us is quite obscured. When a small portion of gut is strangulated, and so sharply nipped as to be quickly mortified or ulcerated through, like an artery under a ligature, the symptoms are very often less distressing, less marked, and less likely to give alarm, than when a portion is included in a mass of omentum, and comparatively safe.

The question turns on this,—Do the symptoms arise from the state of the gut in the hernia, or from the state of the canal and stomach above the part strangulated? Now this is determined by the symptoms of obstruction of the intestinal canal from other causes ; by which it is shewn that distention, the consequent excitement of the muscular coat, the consequent pouring out of secretion into the intestines, and the derangement of stomach, produce those very symptoms which attend strangulated hernia.

Accordingly, the symptoms will often be rendered milder, and the life prolonged, by the ease with which the stomach ejects its surcharge. By the inverted action and vomiting of stercoraceous matter (though always alarming), the distended canal is in a certain measure relieved.

However, let me not push this view too far. Symptoms will arise from the state of the gut (meaning the portion in the hernia). This is evinced by the sympathy of the stomach with the gut in the moment of its descent.

In the same volume of Transactions quoted, p. 305, we have a case of hernia, with obstruction for eight days, where the sac mortified, yet the patient recovered. "Vomiting foul matter, hiccough, cold extremities, hard, quick, contracted, pulse," and, notwithstanding, the intestine in the mortified sac recovers. Is not this a proof that the *symptoms* arise from the condition of the bowels within?

Symptoms of Strangulation.

There is a dragging down, with sickness, when the intestine becomes engaged in the neck of the sac; the lower portion of the intestinal canal is excited, and there is generally a motion; after which there is obstinate constipation. Then there is distention of the belly, hiccough, vomiting; the belly swells and is tender. Towards the region of the abdomen, where the hernia has taken place, or in other words, near to the neck of the sac, the parts are very tender. If unrelieved, the features become pinched, the pulse intermitting, the breath is offensive, and the vomitings stercoraceous.

The pain comes in paroxysm. It begins with a twisting or rolling sensation in a distant part of the belly, coming to the place of stricture, where for a time it is severe and stationary. It relaxes, there is an interval, and it begins again.

It is important to notice that these symptoms are consequent on distention of the canal and obstruction to the descent of the fæces; that they may be all present while yet the gut in the sac is safe; that they may be absent or mild, and the intestines irrecoverably gone!

Practically, therefore, we come to the question, What is it that should alarm us, and make us have recourse immediately to operation?

To this I would answer, that I chiefly consider the state of the tumour; and when we are certain that it is a hernia, and that the efforts to reduce the gut have failed, and the tumour is tense, and the part above the neck of the sac tender, I would not delay

the operation a moment ; but immediately explain to the patient the danger he is in,—a danger from delay, not from the operation.

Is the danger of the operation for hernia nothing, and is it then altogether in the state of the gut ? Would the operation on the parts, in a state natural and undisturbed by pressure, be attended with no bad consequences ?

It is a very natural question, and it has been decided ; when the operation for strangulated hernia has been performed, without urgent symptoms declaring a necessity for it, the operation has proved fatal.

The explanation is this : It is a penetrating wound, the continuity of the peritoneum is broken, inflammation of that membrane is set up.

But there is something in the circumstances in which the operation is called for, which makes this danger less. The neck of the sac is excited,—the intestine is excited, almost inflamed ; and when the gut is reduced, it readily adheres, and the mouth of the sac is closed. And we before observed, that when a penetrating wound closes, the danger of peritoneal inflammation from this cause is over.

The danger, therefore, in hernia is from delay, and principally from permitting the ineffectual working of the distended intestines to bring them into a state of inflammation.

Appearances on Dissection when the patient dies unrelieved.—It is in the dead body that the appearances indicate the nature of the danger and the means of relief. On opening the abdomen, you find some turns of the intestines (which, from their size, you might imagine to be the colon) filling the cavity. They are of a dark bluish-red colour. You trace them down to the stricture, and you find the intestines there glued together by coagulable lymph ; and on their surface flakes of pus, and here and there

black spots of mortification. There is serum in the general cavity, and on turning up the distended intestine some convolutions are observed contracted and paler. These belong to the portion of the intestinal canal between the stricture and the anus.

Acute and Chronic Hernia.

The terms are misapplied, yet some explanation is necessary under this head. Whether hernia be hereditary is an idle question; but it is important to know that there are various degrees of congenital defects in the abdominal muscles, from the total absence of the abdominal muscles, to that state of the umbilicus or ring, in which they are a little relaxed, and wider than natural. When the passages are relaxed, and they are apt to be so in people of a sedentary habit, a rupture appears threatening, and slowly it increases. Such a rupture is easily reduced, and there is little danger of strangulation, and if symptoms shew themselves, time is given for consideration and for measures of relief.

But, on the other hand, when a vigorous and active man, with no looseness of texture in these abdominal passages, has a rupture or hernia come down suddenly, during some powerful effort in which the abdominal muscles compress the intestines, a small portion of intestine pops out through a narrow passage! Then dangerous symptoms commence on the instant of the accident, and without assistance, he is lost in a few hours.

Thus it happens, that in a man while mounting on horseback, or playing at tennis or golf, or in a sailor

with his hands on the tackle of a gun and his foot on the carriage, straining in a state of high excitement, a portion of gut is protruded: the symptoms run a rapid course, incarceration and strangulation come on quickly, and in a few hours he is past assistance. The effect is a consequence of a mechanical cause; the terms chronic and acute, as we use them, are not applicable to the case.

OF INGUINAL HERNIA.

Bubonocoele. Common oblique Hernia. Vento-inguinal Hernia.

After these preliminary remarks, I need only say, that you find a colourless and elastic tumour projecting from the abdominal ring. If you press it moderately, there is a gurgling noise, and it recedes. It ascends when the patient is laid on his back; it descends when he is erect. It receives an impulse when he coughs.

But it may happen that the patient cannot reduce it, as has been his wont; it is becoming hard and painful, and the surgeon's hand is required.

The Taxis—This is the operation of reduction by posture and the pressure of the hand.

Lay the patient on his back, put a pillow under his hips and under his shoulders, so that the spine may be curved, and the abdomen relaxed.

Now grasp the whole tumour; you are not to stuff it up, but to compress it gently, and for some time. Instead of pushing it up, you draw down and smooth the neck of the tumour.

If you push it towards the ring, you double or twist the

neck of the sac ; so that reduction is impossible ! Smooth it down as if you were “ milking the sac ;” and at the same time compress the whole tumour.

If you hear a gurgle, you are going to succeed ; the flatus is escaping into the intestine within the stricture : the intestine in the sac will presently be flattened or emptied, and then the intestines within will pull it up.

When it is empty, you may then follow the rule to push up, first, that which came down last. This attempt to push up the intestine succeeds—not by pushing it up, but by exciting it to be drawn up, by urging the intestines to action.

I do not like failing in this mode of operating, it being the best and most effectual. It requires patience and *tact*, for a little too much pressure and all is lost. In this stage it is usual for our house-surgeon to send for the surgeon of the week, and in the mean time to bleed the patient and put him in the warm-bath. The operation is to be attempted again whilst he is in the bath. Avoid purgatives, and order very large purgative clysters. I do not recommend the tobacco clysters. Putting ice to the tumour is nonsense : do not persuade yourself that you are doing something for your patient, when you are losing precious time. If you fail by the means described, urge the necessity of operation.

I am unwilling to load these pages with cases ; yet the following statement may bring you to reflect on the danger of attempting too much by the taxis. When I was surgeon of the Royal Infirmary here, before going to London, a case of bubonocoele presented, which I could not reduce, and, as was the rule of the house, I called a consultation. When the consultants met and went into the ward, the house-surgeon came forward with a glow of triumph in his face. He had saved us the trouble, he had reduced the gut ; and so he had, and the tumour was gone. Next morning this man died in great agony ; and on dissection I found the intestine burst just where it had been nipped by the stricture ! The folly of the young gentleman needs no comment.

Radical Cure. Obliteration of the Sac.

It is a frequent question, "What hope is there of a radical cure? Must I always wear this very unpleasant thing?" The umbilical hernia certainly disappears. When the truss is used in children, and perseveringly applied, we find hernia at the groin disappear; but in adults it is not to be expected, and hardly to be wished, since the process is not without danger. What is to be apprehended is the partial adhesion of the neck of the sac, and the condensation of the margin, by which it acquires a sharpness and a firmness which prepares it for strangulating the intestine when it accidentally descends.

The effect of the powerful pressure of the truss is to cause an absorption of the fat, which should in part fill and guard the passage. Against this, I fear there is no resource, but in accommodating the machinery so as to retain the intestine in its place without pressing too severely. Procuring adhesion in the neck of the sac is no security against the return of the hernia. If the tendinous texture be imperfect, the peritoneum will yield to impulse, unless supported by the truss.

Instead of elastic pads, firm blocks are sometimes used, with the intention of producing adhesion in the neck of the sac. To be safe, they must be very nicely adjusted. Some attempts of ingenious but ill-educated men in France have been directed to the cure of hernia by obliterating the whole sac. Such attempts cannot be made without danger.

Attempts have been made to cause the contraction of the passage, and the obliteration of the sac, by the application of astringents: they avail nothing. Caustics are highly dangerous, and not for an instant to be thought of,

Long confinement to the horizontal position, and the prevention of the descent of the hernia, may do much; but it is too heavy a price for a bare possibility. Yet if there should be confinement to bed on some other account, the opportunity should be taken to give the chance of a radical cure. Yet let us recollect, that whatever change may be wrought on the peritoneal sac, there can be no permanent safety as long as the form of the ring is imperfect; and no practice can make perfect the tendinous filaments of the abdominal muscles.

I must take this occasion to shew that *mortification* is not all you have to fear in a case of hernia. Without the circulation being cut off, the stricture at the mouth of the sac is sometimes so abrupt and sharp as to ulcerate the intestine (as a ligature cuts an artery); and by pressing the tumour too much, the tender gut is forcibly raised against the stricture, and may be burst. Whenever, therefore, the neighbourhood of the sac is tender, prefer the operation with the knife.

The Truss.—But let us presume that the operator has been successful, and has reduced the intestine. How is it to be retained? Keep the patient in bed before you put on the truss: be well assured that there is nothing in the sac: see that it does not press on the os pubis, nor compress the cord against the bone. Having applied it, make him get up and walk about; make him cough; feel that no part of the intestine slips down: give him proper precautions; for example, that when he feels that it has slipped, and the gut has descended, he is immediately to retire and throw himself down, nor rise till the gut is again reduced.

At night the truss may be dispensed with, or one with a weaker spring employed.

Here the management of his bowels is to be insisted on. You give him proper laxatives. You en-

join the use of the lavement, and that he is on no account to strain at stool.

I must again add, that, when a patient has long and effectually worn a truss, he is in danger on a return of the hernia ; because adhesions have made the passage smaller ; pressure has condensed the neck of the sac, so that, when the intestine has come down, it is in some danger of strangulation.

The Operation for Bubonocoele.

You have beside you a scalpel—straight and curved probe-pointed bistoury—forceps—directory—tenaculum. You look round for the proper apparatus for dressing—needles, strapping, lint, compress, double-headed roller, and the utensils which are necessary for all operations with the knife, as sponges and tepid water. The parts are previously shaved with a sharp scalpel.

Begin your incision above the neck of the tumour, carrying it some way down the face of the sac. You may take the skin up with your finger and thumb : your assistant does the same. Pinch pretty hard, and divide the ply of skin which is between you with the scalpel ; the pain is nothing. If you have calculated well, the incision is of sufficient length, and you may begin your dissection of the superficial fascia : the deeper fascia : the cremaster muscle. These lie in layers over the peritoneal sac, and a clever hand needs only the forceps and the scalpel.

When you come to the sac, you had much better raise the cellular membrane with the forceps ; cut it by carrying the knife horizontally. When the layer is open, run your directory under it in the

whole length of the part of the tumour which is exposed, and run the scalpel along its groove.

Now I would lay aside the scalpel. You are about to open the proper sac; do it by pinching up the sac with the forceps, and cutting horizontally with the probe-pointed bistoury. The serum spouts out and announces the opening of the proper sac.

You have some anticipation of the result of your operation by the colour of the fluid: if pale, it is favourable; if bloody, unfavourable. But there may be none, and that is the reason of your proceeding so carefully in opening the sac; the intestine may adhere.

While the fluid is escaping, you introduce the probe-pointed bistoury, and slit up the sac.

You now examine the intestine. It is not like what you have been accustomed to see; it is rosy-red. It is in fact gorged; but you see the vessels on its surface, and that it is alive.

Do not let the intestine escape from the sac, but introducing your little finger, use it as a directory, and open the sac up to the strictured part. But use the finger no farther; do not attempt to bore in the finger by the side of the intestine, but take the directory. See that the directory passes into the abdomen. Let your assistant guard the intestine with the spatula or a card; take care that it does not rise up over the edge of the bistoury. Introduce the probe-pointed bistoury, and resting the point in the groove of the directory, raise the handle; do not saw or cut, but simply separate the instruments, by which the firm tendinous parts will be cut, and

nothing more. Let this part of the incision be directly upwards.*

If you now put a warm sponge on the intestine, you will have the satisfaction of seeing it assume a brighter colour.

Now, pull it gently down about three-quarters of an inch, then gently compress it; the flatus and fluid within it pass up. If this does not take place with slight pressure, the stricture is not relieved: you must touch it again. When the intestine is empty, you gently press up the part nearest the neck of the sac, first with one forefinger, then another, doing no violence.

The meaning of pulling the intestine down, is to bring the tender part of the intestine out of the stricture, lest it should suffer when you empty the intestine by pressure.

I have seen the operator push his finger violently in, as if he were stuffing a sausage. On dissection, I found the mucous coat of the intestine quite cut through (just as the ligature cuts the inner coat of the artery). The preparation is in the collection of the College of Surgeons.

On reducing the intestine, serum perhaps runs from the abdomen; this is a bad sign, since it indicates great excitement of the intestines within the abdomen.

The intestine being reduced, you dress your patient carefully. Most surgeons use a needle to bring the integuments together; (I never did). Support the ligature with adhesive straps; place a compress;

* In this part of the operation, especially in small hernia, you should have bistouries which cut only at a small portion of their edge; one which is sharp for a quarter of an inch near the point, another which does not cut for an inch of its length from the point, and is sharp only for half an inch.

In the event of an internal stricture, these instruments are of the greatest use.

over this a larger strap; then a folded cloth or napkin; and secure all by the double-headed roller.

Put the patient's hand over all, and tell him to press when he coughs, or on any exertion. Order a clyster, and compose him with a pill of calomel and opium.

If pain arise in the abdomen, use fomentations to the belly; and if not assuaged, you must have recourse to leeches and blisters. It would appear from Mr Travers, that, at Guy's, they give half an ounce of sulphate of magnesia in infusion of roses, and repeat this hourly until stools are procured. Such is the practice with many surgeons. The reason of my practice in preferring large clysters, and calomel and opium, is, that the intestine above the stricture is already overwrought, and, from that cause, is in danger of falling into fatal inflammation. If twelve hours should pass without relief to the bowels, I would yield to the general direction, and give purgatives. If, however, there are no evacuations procured, it will be found to be a consequence of the inactivity of the portion of intestine which had been down in the sac, and that inactivity produced by the injury it has received; when it does not recover its function, the peristaltic motion is interrupted there. The universal opinion in favour of purgatives, is a consequence of observing the happy consequences of stools spontaneously following the operation. It is a very different matter when they are procured by active purgatives.

Clysters are used not to evacuate the large intestines, but to soothe and to draw on gently the activity of the upper part of the canal; to excite, with-

out the possibility of injury to the portion of the intestine which has sustained injury.

As an example of the accidents which render the case intricate, read the account of a second operation by Mr Foster of Guy's Hospital, *Med. Chir. Trans.* vol. v. p. 232. The intestine had been reduced within the outer ring, but incarcerated by the internal ring. In the same paper, there is a notice of a similar consequence from the same cause in femoral hernia.

Scrotal Hernia.—The scrotal hernia, in respect to the anatomy of the neck of the sac, is the same with the bubonocoele. It is the bubonocoele, when the protruded parts have descended into the scrotum.

In these large hernias, the strangulation is more particularly the effect of congestion in the intestine. Very often another turn of intestine is pressed down, and lies in the same passage with the first, and this second portion becomes strangulated.

In my earlier attendance on the Middlesex Hospital, I saw the incision made in the whole length of the tumour! and all the intestines exposed. This is a great mistake, for they roll out among the surgeon's hands, and he knows not where to begin with the reduction. Groping and handling these intestines, turning them over, and trying the reduction first of one portion then of another, is certain death to the patient.

My practice, when the scrotal tumour was very large, was to dissect round the neck of the sac,—to feel for the band of the ring which girded the sac,—to put my probe-pointed bistoury flat under it, and turning up the edge, to divide it, and then to attempt reduction.

If on gentle trials to evacuate the flatus from the intestine I did not succeed, I made a small opening

into the neck of the sac, and divided the stricture from within; taking care to expose the mass of intestines as little as possible, and not to let them turn out among my hands.

Congenital Hernia.

The congenital hernia is also a hernia through the spermatic passage, coming out through the abdominal ring. I consider it dangerous when the subject of an operation. The intestine has directly followed the testicle in its descent, and lies in the vaginal coat. Two circumstances are peculiar here: the sac is thin and elastic, the neck of the sac is peculiarly dense, and the stricture sharp. The latter circumstance I attribute to the attempt of nature to close the passage, baulked by the presence of the intestine.

The operation is the same with what has been described. The elasticity of the sac is more apt to turn out the intestine when the incision is made. You must be very tender in treating the stricture.

In the *direct or ventro-inguinal hernia*, the only circumstance peculiar is the neck of the sac; it does not lie obliquely in the spermatic passage, but comes out direct, pushing the epigastric artery towards the outside. It is this hernia which splits the spermatic cord, and sometimes carries the vas deferens on its anterior surface.

Hence you perceive why you cut the stricture in all cases of hernia through this passage directly upwards. You, perhaps, ought to form an opinion before operating, whether the hernia be direct or oblique; yet it is presumption to proceed upon that knowledge, and, therefore, you cut so as to avoid the epigastric artery, whether it climb on the outside or on the inside of the neck of the sac. You perceive

another reason for being cautious in the dissection of the fore part of the tumour,—the possibility of dividing the vas deferens.

Of the Femoral Hernia.

The crural or femoral hernia is that which comes down under Poupart's ligament, and rises from the hollow in the thigh round the crescentic arch. It is more frequent in women, owing to the form of the pelvis.

These parts have, I trust, been your study. You have observed the course of the vessels to the thigh—their sheath—the reticulated texture through which the lymphatics of the thigh pass up. You have marked the course of the epigastric artery—the possibility of the obturator artery going off from it. You have, in the dead body, passed your finger in the course which the femoral hernia takes, and have observed where it comes out under the crescentic arch. Having this knowledge of the anatomy of the parts, the surgery is comparatively easy.

When the gut comes down into the thigh, it is forced up upon the tendon of the abdominal muscle, so that I have seen it mistaken for a bubonocoele.

This is of consequence in the operation of the *taxis*; for, instead of pushing the tumour up, it should be pressed down. Lay the patient as before described—raise the thigh—turn in the toes—compress the tumour generally, pressing rather downwards—continue the pressure, gradually increasing it—when the tumour yields, change the direction of the pressure, so as to turn it round under the crural arch.

In all cases, but especially in the small femoral hernia, we are apt to be deceived by the diminution of the tumour under pressure: when it is not owing to the return of the gut, but the diminution of the quantity of serum in the sac.

Operation for Femoral Hernia.

Things being prepared as described for the bubonocoele, you make your incision direct on the tumour.

In some cases of hernia, I have thought it right to lift up a flap of the skin, with a view to its falling down, after the operation, over the opening, and receiving the compress ; but this may be left to the surgeon's fancy—there are matters of more consequence.

The first incision exposes the inguinal glands, which very often project from and obscure the hernial tumour. Avoiding them as much as possible, you dissect down to the sac. Now you find a round smooth tumour ; you carefully open it, and slit it up. You then find the peritoneal sac, so transparent that the intestine is seen through it, and so like is the appearance to that of the intestine, that many a surgeon has reduced the whole. But you, knowing the peculiarity of the peritoneal sac of the femoral hernia, take the part between the finger and thumb, and you will feel that the peritoneal sac is not yet opened, that there is a nucleus within. You open it with great care, when the fluid escapes, and you discover a small knuckle of intestine.

Here it is that, from the depth of the parts in the angle of the groin, and from the smallness of the whole, you feel the use of finer and smaller bistouries than those in common use. The finger can here be of little service as a directory : you carefully defend the intestine, (repeatedly I have seen it cut), and introduce the directory. The rest of the operation is performed in the manner described ; you cut

directly upwards, and little is required. It is the neck of the sac, and the sharp edge of the crescentic arch, which require to be cut.

*Treatment of the Mortified Gut in Hernia.**

The gut being found dark-coloured, and to appearance mortified, you inquire if it be possible that the violent pressure in the operation of the taxis has caused extravasation? I have seen ecchymosis from this. You touch the surface with the lancet—it does not bleed. In this case it must not be returned.

You open it freely. You put your finger within the gut, your sharp bistoury without the gut, and you undo the stricture, so that the contents accumulated in the portion of the intestine above the part in the hernia may have a free discharge.

At this stage you can do no more. Take care that you do not destroy the adhesions which in this condition of the intestine form between it and the peritoneal sac. Apply a poultice or fomentation over the dressing, and, with a comforting draught, put the patient to bed.

Gooch (see his works) said, that it seemed to him proper, in this condition of the gut, to make an incision into the

* I have several times seen the gut mortified, and the patient recover without assistance. It occurred two or three times under my colleague, so that we were wont to say he had good luck. But it happens thus: the diverticulum illi, or the caput coli, forming the hernia, the distress and pain is considerable, but the canal being pervious, the patient bears up until the portion included mortifies, when it sloughs off. The fæces are discharged from the wound for a time, but by-and-by they take the natural passage. The case is very different when a whole turn of the intestine is included.

tumour large enough to evacuate the fæces freely. This I believe to be very good practice, but will an incision into the tumour evacuate the fæces freely? You must put your finger within the gut, and you may then discover that the stricture is so narrow that the evacuation cannot be free. If the point of *the little* finger pass, it is certainly sufficient; but if not, it is necessary to cut the stricture, which to accomplish, without undoing the new attachments of the intestine to the peritoneum, is an operation which requires judgment and delicacy.

The mortified gut in time sloughs away, and there is a sore in the groin, discharging fæces; an anus at the groin. This is a distressing condition, but happily not without remedy.

When we have an opportunity of observing the parts (which I have had three weeks after the intestine has sloughed away), we find the two portions of the canal adhering together, and adhering at the same time to the peritoneum within the ring. It is apparent, therefore, on what principle the surgeon has to proceed in performing a cure. The procedure of Baron Dupuytren is to be followed.

This is the introduction of a pair of forceps, each blade in a distinct portion of the gut, so that when closed, they may grasp and compress the intervening septum. A communication being thus formed between the portions of the intestine, you are to limit the discharge outwardly by the wound, till the fæces be gradually restored to their natural course.

I have heard of a suspicious number of these cases being under treatment in one hospital, and at the same time. The case presents very rarely.

In continuation, and on the subject of *Anus at the Groin*, all the elements for a just reasoning have not been taken. Before we think of sewing the intestine, or doing any fini-

cal operation with the needle, we must consider whether or not it is proper to break up the adhesion between the intestine and peritoneum. Such adhesion, I am certain, must have taken place when the intestine is mortified from strangulation. Another consideration is, that the intestine is sometimes ulcerated through, and as it were cut by the stricture. I no where observe the distinction made between ulceration and mortification of the intestine.

In all cases where the gut is open, whether by accident during the operation (as I have more than once seen), or by ulceration or mortification, the first object should be, the free evacuation of the portion of the intestinal canal between the stomach and the hernial portion. If the gut has been accidentally opened, we may refer the practice to *wounds of the intestine*. But if the gut has been opened by ulcer or sphacelus, and in hernia, it makes a special case, and should not be confounded with that in which the intestine has been wounded with a sword!

Nature points to the way, and sometimes accomplishes the cure unassisted. When we examine the parts after a portion of intestine has been strangulated and sloughed away, we find the portions of intestine not only adhering to the peritoneum, but closely embraced, and adhering together. It would appear that the spontaneous cure by *anus at the groin* has been effected by ulceration opening a communication between the two portions.

This process we are to facilitate or to imitate. I was wont to say that a gross ligature should be passed between the two portions, the ends of which should be left hanging from their respective orifices. That this would secure, 1. the free discharge; 2. the attachment of the gut to the wound; 3. the close attachment of the portions to each other; 4. the opening of a communication, which nature inclined to and favoured, between the two portions. This mode only yields to that adopted by M. Dupuytren.

If we look forward to this mode of operating, as it requires that the blades of the forceps should be put into the portions of the intestine, now separated by the mortification of the intermediate part, it is obvious that we should be able to distinguish the openings. If this object be not anticipated, and the anus at the groin be formed in a natural

way, you will find that there will be only one irregular and tortuous opening from which the fæces are discharged : the opportunity of distinguishing the separate portions of the gut is lost.

The reason why, in some rare instances, the patients have done well, in the case of mortified intestine, when left to nature, is this : In the first place, the case in which the gut runs to gangrene is principally where a portion low in the course of the canal is strangulated ; for the portion of the intestine is less vital the lower it is in the canal. Again, it is the distention of the strangulated portion which causes the obstruction ; and when the portion mortifies and opens, or is opened, the intestinal fluids are discharged—the sudden angle, and consequent tension, of the gut is removed. But still, from experience, I say that the little finger should be introduced *within* the gut, to see that the passage is sufficiently open ; since freedom of discharge gives the only hope of the patient's surviving. If the finger does not pass, the stricture should be divided as I have described. But let not my reader imagine for a moment, that I am the advocate for freeing the gut from the neck of the sac. To undo the adhesion, and to draw out the gut, and to cut off the mortified portion, and to fix the ends with ligatures, is the act of one altogether misled, and negligent of the actual condition of the intestine in hernia, of the causes of death, or the hope of success.

Of the Omentum in Hernia.

Let us take this opportunity to consider what is to be done with the omentum ; and, in the first place, I do not like Mr Travers' saying, that whether (in the case of *Epiplo-enterocele*), the gut or the omentum be reduced first is of no consequence ; for a good deal of fingering is required to reduce the omentum. It has no muscular action to assist you, and the intestine, long held in a stricture, is in no condition to

sustain without injury the stuffing up of the omentum. Therefore, let the intestine be first reduced.

You have understood the condition of the omentum in a hernia—that it is no longer like the omentum as you see it in the dead body, or as you may see it protruded from a wound of the abdomen. Instead of being soft and delicate, it is for the most part condensed where it passes the neck of the sac, and forming a mass in the sac, being heaped together, and adhering.

In the operation of the *taxis*, it is this change, which the omentum undergoes in the sac, which causes the difficulty in the reduction. The reduction must be made gently. M. Arnaud says truly, that, from the reduction of the omentum, the patient suffers a peculiar pain, not consequent on the state of the intestinal canal, but directly from the stomach sympathising with the injury to the omentum. The patient has at first a *mal-aise*—then pain—the pulse becomes weak—the face pale—a cold sweat succeeds, and he may faint; for which, you may order him a cordial, wine with spices.

In the operation with the knife, suppose that the intestine is reduced—what is to be done with this mass of omentum? It cannot be pressed up into the abdomen, and certainly not without being first disentangled and laid out, which, if it be practicable, is attended with a tearing of the substance, and so it is a bloody mass; and it is further injured by being fingered and pressed through the ring.

I have cut it off, leaving the cut surface to bleed, taking care that the stricture be relieved.

But I am of opinion, that when the omentum is

attached to the peritoneum of the neck of the sac, the adhesion should not be undone. When the adhesion is undone, and the mass reduced, peritoneal inflammation is apt to follow; and then you find, on dissection, the part of the omentum which was in the sac an inflamed or a putrid mass lying coiled in the abdomen.

The unhappy circumstance, against which it is not in our power to guard, is the dragging of the omentum upon the stomach, from which great distress arises, as sickness and pain on taking food. But if this dragging of the stomach has been a consequence of the descent of the omentum, I much doubt the possibility of relieving it by reducing the mass of omentum; and I am certain that there is not only distress, but imminent danger, from reducing such a mass of omentum as will relieve the stomach when it has been from this cause dragged out of its place.

To cut off the part which has been down, and push up the part that is in the neck of the sac, will be of little advantage; since the omentum adheres to the neck of the sac (and a happy circumstance it is that it does so), and the drag upon the stomach must therefore be relieved in a very slight degree.

You perceive that my chief anxiety is, that the adhesion of the contents of the abdomen to the peritoneum on the inside of the neck of the sac be not torn up; for then the hazard of fatal peritoneal inflammation is greatly increased.

There are many occasions in which we have to reflect on the changes to which the omentum is liable. Even when confined within the abdomen, it will form adhesions round

the intestinal canal ; and at the same time, or rather perhaps consequently, it will become so firm and cord-like as to strangulate. I have in the course of my life made several dissections after *ileus*, in which I have found this to be the cause of death.

When, therefore, we consider the liability of this membrane to inflammation, adhesion, and condensation, and when we witness its condition in *epiplocele*, we become aware of the danger of strangulation from the coiling of the epiploon round the gut ; for example, see the case by M. Boudou—*Sur un étranglement de l'Intestin fait par l'Epiploon*.—*Arnaud*, *Mem. de Chirurgie*, vol. ii., l. c. p. 577.

Umbilical Hernia.

In the relaxed umbilicus of children some mechanical support is to be given. The section of an ivory ball is employed ; the convex surface is placed towards the umbilicus, and the flat surface strapped down. There is a proper truss for the case of more formidable protrusion.

Umbilical hernia is common with women who have had families. Umbilical hernia is to be reduced. The operation with the knife is the exception to the rule ; it is very seldom required. If it should be necessary, take the following method. But in the mean time, let me say that, in some late systems, I see an advice given which would bring you into some dilemma. I mean “ a crucial incision over the prominence of the tumour.” Two young gentlemen, very soon after passing the College of Surgeons of London, had a patient with umbilical hernia, on whom they thought proper to operate. They cut directly over the tumour, laid aside the omentum, and found the intestines in their hands ! They cut

the stricture, but to reduce the intestine was beyond their power. Now, here lay a woman with the bowels turning out (and they will evolve themselves in a most remarkable manner), and the handling of the young surgeons was of no avail. The neighbours took the alarm, and all were horror-struck. Now, if you do not wish to encounter this scene, proceed as follows.

Make a small oblique incision on the neck of the tumour, your assistant holding it over to the other side. Having come upon the margin of the abdominal aponeurosis, scratch through the base of the sac : you will find it thick and strong. Having thus got within the sac, hook your finger round, so as to feel the stricture ; and feeling it, introduce the probe-pointed curved bistoury (that which cuts only at a small portion near the point), and divide the margin of the stricture.

After this resume the taxis, and take care if possible to avoid exposing the intestines. The advantage of this mode of operating is, that you can apply the truss ; and if it should not be possible to return the mass into the abdomen, at least you have taken off the stricture, and have not exposed the bowels so as to produce fatal inflammations.

M. Garingeot teaches us that hernia takes place in the tendinous parts of the abdominal walls. See in the first volume of the Memoirs of the Paris Academy, p. 690, Cases of Hernia of the Stomach attended with peculiar circumstances. Such herniæ take place in the linea alba, near the xyphoid cartilage. Other ventral herniæ take place in the linea semilunaris. You find there also cases of herniæ through the foramen of the obturator ligament.

Hernia of the Bladder.

You will find cases by *M. Verdier* in the second volume of the Parisian Memoirs, *Recherches sur la Hernie de la Vessie*. The remarkable thing is, that patients have submitted to this complaint without requiring advice, and their condition has only been discovered on dissection. One may say, how is this? what is the peculiarity which distinguishes hernia of the bladder from hernia of the intestine? The consideration of this point will illustrate the subject of strangulation.

The bladder in a hernia does not fill as an intestine does. It does not secrete as an intestine does, consequently it is not strangulated. If the fundus of the bladder should escape from under the peritoneum, and slip down into a bubonocoele, the ureters are not engaged. The urethra is free, and the circumstances which I have pointed out to you as causing incarceration and strangulation are not present.

Herniæ of the bladder, with calculi, are recorded by Ruysch and many others.

CHAPTER III.

OF THE STONE—SOUNDING—LITHOTOMY—
LITHOTRITY.

Surgical authors seem to delight in leaving their proper subject, in order to occupy neutral ground. I shall not here treat of the chemical structure of CALCULI. I have learned very little in consultation with my learned brethren on this subject. How delicate the subject is, can be made to appear by the succession of layers of different chemical composition in a common calculus. How slight the causes are which produce different composition in calculous deposit, we may learn from the changes occurring during hysteria, when red and white sand are produced alternately. How slight the change in the process of digestion which shall produce an alteration in the composition of the stone, every day's experience evinces: and how apt, therefore, practitioners are to do mischief by chemical correctives introduced into the stomach. Thus saline draughts with excess of alkali may cause the red sand to disappear, and throw down in its stead a more insoluble compound—a triple phosphate.

It is, indeed, a delicate subject, and the last discoveries shew that only mischief can have resulted from former interference. Study to correct the state of digestion, and give tone to the viscera, as the only

safe measure of practice when there is deposit from the urine. A course of blue pill, or an active purgative, will make the urine alkaline,—another proof that the safe mode of correcting the secretions from the kidney, is by attention to the digestive process.

§ I. LITHOTOMY—OPERATIONS FOR THE STONE IN THE BLADDER.

As we turn from one scene to another, we know not which is the most important duty of the surgeon; there are so many occasions on which self must be forgotten, and devotion to the duties of humanity must overcome all lesser considerations. I have felt that there is no reward sufficient to compensate for the anxieties attending the task of the lithotomist. And let not the unfeeling suppose that they are better suited to the duties of the surgeon; we owe the improvement of the operation of lithotomy to those who felt severely the responsibility of their office.

We must not here indulge in that curious history of the progressive improvements in the operation of cutting for the stone; you will read it in the first volume of Mr John Bell's *Principles of Surgery*, 4to.

If we begin with the account which Celsus has given of the operation, we shall trace it as the operation with the apparatus minor, through the early and middle ages; an operation after the Egyptian method, that is, a handicraft transmitted from father to son, or from master to apprentice; a work done by imitation and mechanically, and without science or the anatomical knowledge of the parts.

We learn, on the other hand, that, as the operation seems ever to have been attended with risk, the physicians, who then guided the hand of the surgeon, found a reason for those disasters in an aphorism of Hippocrates, that membranous parts should not be cut. This gave rise to the operation with the apparatus major—a cruel proceeding, an operation of dilatation, as it was supposed, but in truth of laceration.

Whilst the surgeons of Paris were in the use of performing this operation, in which the sufferings of the patient were grievously prolonged by the use of many instruments, appeared Frere Jacques, an itinerant operator, one who had, in the manner which I have stated, learned to practise the operation, viz. by imitation. He was a barefoot mendicant friar, doing his office for the love of God, and doing it as if by inspiration, quickly and successfully. His operation was indeed a contrast to the laboured, protracted, and of course painful, operations of the surgeons of the Hôtel Dieu. Here commences the history of lithotomy as it touches our manner of operating in the present day. You must study this piece of history: the anxiety of the surgeon Fagon, who was suffering with the stone; the fate of the Mareschal de Lorges; the improvement of Frere Jacques under the instructions of the Professor Du Verney; and the established reputation of the lateral operation.

The symptoms of stone in the bladder are :

1. Frequent call to make water.
2. Pain after making water.
3. Pain in the lower part of the glans penis.
4. Bloody urine, especially after exercise.
5. Pain in going

down stairs. 6. Mucous sediment in the water. 7. Great suffering, with a countenance that betrays no disease. We need go no further, since these signs are enough to induce us to sound and search the bladder.

Of Sounding for the Stone.

You may introduce the sound whilst the patient stands before you, leaning on your assistant or against the wall. In this position, to find the stone, you must carry the point sharp round the os pubis, for it will be found lying on the os pubis.

You then lay the patient down on the sofa, and then you will feel the stone with the convex part of the instrument. Not feeling it, you will press the the sound down, and then you will chuck it if it lie, as probably it does, behind the prostate gland.

If you do not touch the stone, do no violence feeling in different quarters; but *change the position of the patient*. Prop up the hip with pillows; raise him higher still by the thighs; and the stone will gravitate from the sort of cell in which it probably lodges towards the fundus of the bladder, and meet the sound. Roll him first to one side and then to another.

When your patient has been sounded and no stone felt, and when you are notwithstanding, from symptoms, pretty sure that there is a stone, study then the position; as it were, shake the calculus from its place of lodgement; raise the lower part of the body; and probably at once, without giving the patient further pain or trouble, you touch the stone, and he is sensible that you do so.

When you feel the stone, the next important inquiry regards its bulk. You are not satisfied, with a view to lithotomy, without pressing the sound first on one side of the stone, and then on another. You endeavour to dodge the instrument over the stone, to ascertain the extent of surface. You may introduce the finger into the rectum, and feel the stone between the finger and the sound. Some surgeons will not operate until they have thus examined.

You may be deceived in many ways ; the rub of a stone in the urethra or prostate may, if you are not careful, give you the impression of a stone in the bladder ; and when you think you are moving the instrument from point to point of a large stone, you may be only striking the same small stone repeatedly.

Therefore be careful, as you pass the instrument, to calculate the parts it perforates ; so that you shall know when it enters the bladder, and consequently that all *rubs* before that must indicate only calculi in the urethra or in the prostate.

Be careful to distinguish the callous or ulcerated surface of a diseased bladder from stone ; which is often the more difficult, as calculous matter concretes whenever the natural mucous surface of the bladder is abraded.

It will seldom be necessary to sound with the silver catheter. However, you may be induced to try this method. It consists simply in introducing the catheter, and letting off the urine at the same time that you move about the catheter ; thus exploring whilst the bladder is in the act of gradually contracting.

The Operation of Lithotomy.

See that you have every thing you can by possibility want, and that your assistant knows what you shall stretch out your hand for, and the stages of your procedure. You want little it is to be hoped. *The staff, the knife, the blunt gorget, and the forceps, perhaps a scoop or lever, are to be at your hand, or in your belt.* But it is presumptuous to suppose that all is to go right. Some circumstance may derange your plan. On the bye table, therefore, have various forceps and scoops—a proper syringe—a prepared tube—and strong forceps to break the stone ; with needles and tenaculum and ligatures. These need not be in sight. Lay a folded blanket on the table ; waxcloth below the table ; water and sponge ; wine and water in the room.

There is one thing I would insist upon,—a large staff with a large groove. There was a great mistake in using the staff of the apparatus for cutting with the gorget. The staff was small, and the groove suited to the beak of the gorget a mere slit. When I became surgeon of the Middlesex Hospital, I not only found no staff there, but not in any instrument-maker's shop did I find a staff suitable. My staff was always as large as the urethra of the patient would admit, and with a large groove. When you use a small narrow staff, you cannot at once cut into the groove and lay open the urethra ; the soft parts turn round on the instrument, and you must cut again and again. Besides it gives you little assistance in passing either your finger or the forceps into the bladder.

The assistant is expected to do all the preliminary operations. See that the table be stout to bear both patient and assistant. The garters are round the wrist ; the staff is introduced ; the stone is felt ; the patient is then tied up.

The surgeon may well dispense with the ceremony of letting the consultants feel the stone, by the way of making them parties to the event ! He should himself feel it ; lay

the sound in contact with it ; determine in his own mind whether it lies above or below or to one side of the staff. " He who sounds well, cuts well : " with him there is no groping with the forceps, as if he were seeking something in an empty pocket.

The Incision.—The first incision is made by entering the knife between the bulb of the urethra and the ramus of the os pubis, on the left side of the perineum, and carrying it down past the anus.

In doing this you do not cut with the face of the knife ; for an incision thus made is sufficient to the eye, but the parts which ought to be divided are not cut. Therefore strike the scalpel dagger-ways into the space by the side of the bulb ; and as you carry it down you must bring it more superficial, or the rectum is in danger : and then it cannot be an incision, but a dissection ; for, having made this first cut, you put the fore-finger of your left hand into the wound, and pressing down the parts, and pressing back the rectum, you touch the fibres again and again ; cutting across the transversalis perinei.

Of late years I have cut differently, and with much advantage. My knife is sharp-pointed, cutting on one edge only ; or a common scalpel, with a piece of adhesive plaster around it, leaving an inch and a quarter of the edge uncovered.

I introduce the finger of the left hand into the rectum. I plunge in the knife with the edge upwards, a little behind and by the left side of the anus. The deep sphincter is between the knife and the finger. I carry the point of the knife quite up to the face of the prostate. I move it there so as to cut the essential parts, in order to lay bare the membranous part of the urethra ; and withdrawing it, I cut across the transversalis, and carry the edge

at once up by the side of the bulb : the *incision* is completed. If this be done slowly and deliberately, it looks well ; but more than that, all essential things are accomplished. There is a large and deep incision, low enough by the side of the anus, and the more delicate part of the operation is done, whilst yet the patient hardly feels the pain, for this piercing of the point of the scalpel is by no means so painful as the broad cut ; and the finer part of the operation is at once finished, whilst the patient is perfectly steady.

Moreover, I am convinced that this was the cut of Frere Jacques, who is described as using his knife dagger-ways, plunging it in at the point of the hip ! To those who were cutting on the staff, where it was made to project in the face of the perineum, this deep incision must have appeared too bold. But when you consider the depth of the parts, and that they must be cut to insure the patient's safety, you will probably adopt my method.

I cannot sufficiently impress upon you that the first incision is not merely to make way into the bladder, but to give an easy and depending discharge to urine and matter, so that there shall be a perfectly free opening afterwards.

The most common error is in making the incision too high,—feeling for the staff. I have seen full one-half of the incisions above the level of the arch of bone, and consequently useless. The effect of this is, that when the operator has grasped the stone in the forceps, it is driven out of his hold by coming against the arch of the pubis ; and he cannot, as he

ought, draw downwards, because the incision is not low enough.

As to cutting on the staff, never mind the staff in this part of the operation, but cut for the face of the prostate gland; the point where the urethra runs back into the gland.

Second Incision. Cutting into the neck of the Bladder.

You now turn the edge of the scalpel upwards, and towards the groove of the staff.

You enter the point into the membranous part of the urethra, just anterior to the prostate, and cut towards you until you feel the knife grate in the groove of the instrument.

Observe that when we say the membranous part of the urethra, you find nothing of the kind now, for the substance around the urethra is firm, and you have some depth to cut into the staff.

The groove of the staff should be rough, not polished, so that you may feel the knife grating in it.

Having got the knife in the groove of the staff, turn the point towards the prostate, the cutting edge towards the left side of the patient, and carry it directly into the bladder; and resting the point in the groove, you move the handle of the knife so as to open the side of the prostate gland. The point of the fore-finger of the left hand may now (directed by the groove of the staff) be passed through the prostate. You may proceed with the operation, with the scalpel. But I rather advise you to lay aside the scalpel, and taking the bistoury, pass it along the groove of the staff into the bladder, and at the same time direct it by the finger. The bistoury directed to

the left side of the prostate completes the division of that lateral portion.

Our best operators say, and I believe them, that much must be done with the finger; for the finger being in the bladder, in a man of moderate size, you can feel the stone, although, perhaps, you yet cannot judge of its size. You pass and repass the finger. You feel the edge of the incision. You again, perhaps, lay the flat side of the bistoury on the finger, and, turning up the edge, you cut the resisting part, and always in the direction to the left side of the neck of the bladder.

The Introduction and use of the Forceps.

So far all is easy and plain, and an anatomist can make no mistake. If you use such a staff as I have recommended, you place the blades of the forceps into the groove of the staff, and run them into the bladder. If you have the slightest doubt, or feel the possibility, of the forceps not passing into the bladder, you use the blunt gorget; slip it along the finger, and the forceps along the gutter of the gorget.

I have never found this necessary, but in your early operations, you must take every precaution.

When you have the forceps in the bladder, you make the assistant withdraw the staff; you feel the stone with the closed forceps; you expand them laterally. If the stone has been above the staff, it now falls into your grasp. If below, the contracted bladder will raise it into your grasp; not seizing it,

you rise from your seat, and carry the forceps down behind the prostate.

When you have grasped the stone, you cannot expect to *pull* it out directly; you have to dilate and to bring the stone, which probably projects beyond the blades of the forceps, over the edge of the incision in the bladder. Therefore, take time; it is becoming, and it is right. Use the blades of the forceps as the accoucheur does, in delivering the child's head with his forceps, (I have seen an operator move them up and down!) move the handle first to one side then to the other, and carry the whole low and towards the rectum, else you will bring the stone upon the arch of the os pubis, and it will be thrown out of the grasp of the forceps.

The stone being extracted, you look to it; if it be rough on all its surface, there is no other stone; if flat and smooth on one side, there is another stone. At all events, you explore the bladder to be satisfied, and a catheter or sound may be used.

If the stone has broken, if chips are apparently broken off, the bladder must be injected. The pipe for injecting the bladder should be open on the side. I have observed the direct and forcible injection of fluid into the bladder to give pain.

When I have attended the most distinguished operators of London, they have put a tape around the thighs of the patient, and put him to bed. This is a practice I on principle disapprove.

I have only one thing to add to the usual precautions in the after treatment: As the urine does not, and ought not, to pass the urethra for a fortnight, the urethra is irritated with its own secretions, and tepid water should be care-

fully injected from the penis backwards into the wound. It gives very considerable relief.

Let us consider why this operation is looked upon as so serious, and inquire how and from what cause the patients die.

The first and especial cause of death is violence; violence in extracting the stone, and that either owing to its great size or to a bad incision.

The next is extravasation of urine.

The third and last is hæmorrhage. A *large stone* is indeed a serious matter. If you compare the width of the broadest of the cutting gorgets with the circumference of a large stone, you perceive at once that, in the operation with the gorget, there must be grievous laceration. So far, at least, the advantage is with the scalpel and the bistoury, that you can enlarge the incision when you find, from the grasp of the forceps, that its diameter is great. But first endeavour to discover whether or not you have seized the stone in its largest diameter; for it is a sad thing to be bringing forth a stone grasped by the forceps in its longest diameter, when you might have extracted it with much less effort, not to say violence. It is sometimes possible, without losing hold of the stone, to turn it with your finger. If this be not practicable, you must let it go into the cavity again, and seize it anew.

If you hold the stone with its long diameter in the length of the blades of the forceps, and still it is large for the incision, I would not advise that it be let go. Rather wrap a turn of a wet roller round the handles, so that the instrument retains its grasp, and with the finger and the probe-pointed directory

enlarge the incision ; and if it be required, you may direct the edge towards the right side, and divide the right half of the prostate.

If the stone should break, let it not trouble you ; it is better to use the forceps often than to drag out a stone with violence. For any lesser reason, I should be sorry you were to introduce the forceps often.

I dislike on all occasions to speculate on what might be done. I believe in these volumes I have noticed nothing which I have not either practised or seen put in execution ; but I think it practicable in the event of a very large stone, to break it, by the means used in lithotrity.

Of the Extravasation of Urine.

I had operated on a gentleman to my own contentment ; every thing promised well. I left him in charge. I received a letter which alarmed me. In the evening of the operation, he had intense desire to make water. He felt that he did make water, but little came. This gentleman died in the third week, of suppuration in the pelvis. The evil had been done in the night of the operation. The urine had been forced into the cellular membrane, laid open by the incision, whilst it was stopped in flowing outwardly by the agglutination of the lips of the wound. In all future operations, I used a tube for two days.

On this unhappy occurrence, I consulted books and cases, and I perceived that many unfortunate cases of lithotomy were attributable to this cause.

On these considerations I would not have you

bring the patient's thighs together. I would not have you felicitate yourself on your patient making urine, by the natural way, immediately after the operation, or on the second day. On the contrary, lay a bit of oiled lint between the lips of the wound, and return early and pass your finger into the wound, and break down the coagulum, so that the urine may pass out freely.

This you must do, if you do not take my advice, (which some would rather burn their fingers than do), which is to have a portion of elastic gum catheter, covered with dressing and oil, to be laid in the wound. It saves a great deal of anxiety; it is not thrust deep; the patient is not sensible that it is there; it does no harm; it saves many lives.

With regard to Hæmorrhage.—By the common operation—too common—of cutting into the bulb of the urethra, and slitting the urethra up to the bladder, the artery of the bulb is cut, and the bleeding is considerable. The transverse artery of the perineum must be cut, and the bleeding from it is no more than what is proper. But when the internal pudic artery comes down upon the side of the prostate, and there is cut, the patient may die of hæmorrhage.

In a protracted operation, the operator is not sensible how much blood is lost, till looking under the table he sees a very large cake or mass of coagulum. In this case, the operator would do well to look to the vessels before putting his patient to bed. They may have ceased bleeding for the time, and yet on the return of bleeding the patient may die!

I cannot conceive the difficulty in taking up a deep artery. It is always possible to hook up the part, and throw a noose over the tenaculum, and let the tenaculum remain for the night.

But I have known bleeding from the interior of the bladder, and that I could not stop.

The cutting gorget was the most unhappy invention, and has cost many lives.

The operation with the *bistoure caché* is, if possible, worse.

Many improvements of knives and bistouries have been made. They too often declare past misfortunes, and the weak inventions for their avoidance. They are, however, harmless as long as the surgeon depends on his knowledge of anatomy, and does not trust to mechanical contrivances: as long as he feels his way and uses his finger more than his knife.

I may be permitted to add, in recommendation of the method and the precautions which I have offered for cutting for the stone, that the last patient on whom I operated—the last on whom I shall operate—I met at the beginning of the third week in Regent Street! The urine had passed naturally on the beginning of the second week, although there had been a tube in the wound for two days after the operation.

There is only one subject more that occurs to me as requiring your particular observance. Every authority, every surgeon of repute, has declared the great impropriety, the ignorance and stupidity, of trying a man's dexterity by the time taken in this operation. Try him, if you will, by his collected manner—by his methodical proceeding—by his making no second effort to accomplish any part of the

operation. Admire him, because he has anticipated every thing, left nothing to chance, and is never for an instant without his resources; but know, that if you take your stop-watch, you are disgraced in the mind of the well educated part of the profession.

Mr Carpue introduced to the *English reader*, Souberbielle's high operation for the stone, and Mr Martineau did him the honour of commenting upon it.—*Med. Chir. Trans.* vol. xi. p. 402.

Mr Martineau, in his early practice, "witnessed many untoward circumstances," which determined him to lay aside the cutting gorget, and use the knife only and the blunt gorget. You ought to have beside you a conductor or blunt gorget, but I hope you will not find it necessary. When the staff is large enough in the groove, and when you use the fore-finger of the left hand properly, you will need no other directory than the groove of the staff.

Mr M. takes the staff in the left hand, and the blunt gorget in the right. This to me would be an awkward part of the operation. It is better to do the operation by introducing the finger along the staff, and then enlarging the wound by passing the bistoury on the finger; and withdrawing the finger two or three times, you ascertain that the passage is large enough, smooth, and uninterrupted by irregularities.

Mr M.'s operation is excellent. But I object to the dressing with lint and tow to *exclude the air*, because it cannot be done without encountering a greater enemy, the confinement of the urine.

Mr M. aims at healing the wound by the first intention. These are seducing words, but the thing is not to be thought of; *first*, because it is not possible,—and, *secondly*, because there is danger of obstructing the flow of urine, and driving it among the cellular membrane.

Mr M. is aware of coagulum of blood obstructing the urine; and he adds, if it be suspected, it should be relieved by passing the finger into the bladder.

But what is it that gives the suspicion? Is it not the ineffectual strain to make urine? Now, it is at this time that the mischief is done; and, therefore, to avoid it, we must

use the tube, or pass the finger soon after the operation, and again and again.

I quote Mr M.'s concluding remark. "Death follows oftener from exhaustion after a tedious operation, or from despondency, in which the powers gradually decline, than from acute disease."

As for despondency, the state of a man freed from the pain of stone is a state of exquisite delight and pleasant anticipation. The "despondency" I believe to be the effect of loss of blood; and the "exhaustion," I take to be the shock to the system from the violence done.

For cases of lithotomy unfortunate in consequence of the great size of the stone, read Mr Earle's paper, *Med. Chir. Trans.* vol. xi. p. 76.

The instruments which I have seen for breaking the stone are made powerful enough, but then they are made to grasp a stone of moderate size, and no more!

My notion of dealing with a large calculus, is to grasp it with the common forceps, and to excavate it and crush it. The instruments for lithotrixy afford the model.

Note on the High Operation for the Stone.

When in conversation with Mr Cline, I informed him that they were reviving the high operation in St George's. He said he was present at the last operation of the kind performed in England, and that the intestine fell out from the wound!

What was it, then, that made them dismiss this operation here in England, and in our own time revive it in France? The objection to the high operation was—1. The neighbourhood of the peritoneum, and the danger of peritoneal inflammation. 2. The contraction of the bladder, and the frequent impossibility of raising the bladder so high as to expose it without cutting the peritoneum. 3. The evacuation of urine from the incision into the cellular membrane

behind the pubis, and the difficulty of emptying the depot of urine and matter when this did occur. 4. The hazard of chipping the stone in operating with the forceps, which portions of stone it was difficult to get out of the bladder, and when they remained they formed the nucleus of another stone.

The revival of the operation was on the alleged necessity arising from the difficulty of extracting large stones from below. But, surely, if the operation be performed below, and by incision, in the neck of the bladder, and if, instead of introducing forceps of monstrous size and grasp, the stone be broken up by the operation of perforating it and bursting it up, the patient will suffer a less hazardous operation than that of the high operation.

I must, however, notice the manner in which it is proposed to obviate the objections to the high operation. The incision is made first in the perineum, in the usual manner; then a staff is introduced from below, and the fundus of the bladder pushed up above the pubis. Here it is cut upon, and the stone extracted, so that the bladder is transfixed, and two incisions made into it instead of one. The lower incision obviates the objection to the chips of the stone remaining in the deep cavity of the bladder, and also the escape of urine upwards upon the cellular membrane of the abdomen. This double operation I cannot approve of.

Of the Stone in Women.

The direct and short urethra, and the absence of the prostate gland in women, make it the duty of

the surgeon to proceed in a different method from the above when there is stone in the bladder. The complaint is rare. When stone forms, it is often expelled without assistance; and it is possible to render assistance without cutting.

The female urethra admits of dilatation. You accomplish it by a succession of bougies, or you use a piece of gut introduced into the urethra, and forcibly distended with air. The width of passage thus obtained admits at once of the use of the forceps, so that the calculus may be withdrawn; and if this be not at once practicable, an instrument to break the stone may be introduced, and afterwards the fragments can be brought away.*

Of the Recto-vesical Method of Cutting for the Stone
—I ought not to speak at all, having neither practised it nor seen it performed. Indeed, as to seeing these operations, little is to be learned. As far as my judgment goes, the recto-vesical operation offers no advantage which we do not obtain by the lateral operation, when the external incision is properly

* Mr Bloomfield introduced a piece of gut, the cæcum of some animal, into the urethra of a girl, and by distending the gut, dilated the urethra in such a manner as to permit a calculus to be discharged. Douglas employed sponge for the same purpose, and recommended dried gentian root. There are two papers by Mr Thomas of very considerable interest. In the first (*Med. Chir. Trans.* vol. i. p. 123), he proves how easy it is to dilate the neck of the female bladder. This he did to introduce his finger and extract an ivory ear-picker. Dr Yellowly, in the 5th vol. *Med. Chir. Trans.*, gives an account of a stone removed by the fingers from the female bladder, weighing $3\frac{1}{2}$ ounces 3 drachms, $3\frac{1}{2}$ inches long, 2 broad.

It seems all very easy, and yet I have seen a poor woman die, resisting all attempts to give relief, from the extreme sensibility of the parts.

made. On the other hand, there are very obvious disadvantages, *e. g.* the deep section of the rectum, the division of the vesiculæ seminales. If it were desirable to cut into the lower part of the bladder behind the prostate gland, nothing would be easier without implicating the rectum, if it promised to obviate any difficulty encountered in the lateral method. I entreat you to read diligently the history of the operation of lithotomy, before you think of deviating from the prescribed incisions which long experience has proved to be the best.

Additional Note on Lithotomy.

I have repeatedly stated that Cheselden performed his operation in three different modes. 1. That he cut into the bladder without dividing the prostate, a method that proved most unfortunate. 2. That he performed the operation by inserting the point of his knife into the membranous part ("muscular part"), anterior to the prostate, and carried the incision through the left side of the prostate into the bladder. 3. That he varied his method a third time, cutting the same parts in a contrary direction.

On this subject you will read with interest a paper by Dr Yellowly. He makes it appear that Douglas was incorrect, in asserting that Cheselden changed his mode a third time. For my own part, I always objected to follow this great surgeon in his third method, and have ever recommended the second mode, and practised it. I must add, however, that there is no difficulty in pushing the knife behind the

prostate, and cutting the neck of the bladder, by drawing the knife towards you along the groove of the staff. My difficulty is to conceive a motive for Dr Douglas describing this so-called third mode of operating, unless he had been so informed.

I trust that now, by what you have seen and heard, you will be able to appreciate the curious history of this operation by Mr John Bell. See his works, the 4to edition.

§ II. LITHOTRITY—BRUISING THE STONE IN THE BLADDER.

The cutting down the stone in the bladder—the bruising of the stone—had been laid aside as an operation, and forgotten.

The operation of cutting into the bladder by the perineum, and so reaching the stone, and breaking it down, is a very ancient operation, and one which I have hinted in the foregoing pages may be resorted to when the stone is large. The contrivances of modern date for breaking the stone in the bladder give still more countenance to it. The discovery, as it is called, of the possibility of passing a straight instrument into the bladder, has given rise to the operation of lithotrity,—of filing down, boring, and breaking the stone, without cutting, by instruments similar to those which in former times were used for stones in the urethra. The proposal of operating without cutting is ever a favourite and popular one, and so this has been received to be carried, as the

history of our profession uniformly shews, in similar instances, *too far*.

The first instrument that attracted the attention of the profession was of the nature of the *tire-balle*. From a straight canula three elastic branches were pushed forth; with these the stone was seized, and held, whilst a perforator or gimlet played in the centre, excavating the stone, and so weakening it, that on the branches being drawn within the canula, the stone was crushed between them. This I believe was the invention and practice of M. Civiale.

A great many additions, improvements, and not a few stupid inventions, have been joined to this original instrument.

But although these instruments were supposed to owe their simplicity and excellence to the possibility of introducing a straight instrument into the bladder, it soon appeared that one of a curve so abrupt towards the end as almost to form an angle, was better suited to the purpose of breaking the stone.

This instrument consists of two parts or branches of equal length and strength, joined by a sliding groove. When the inner one is drawn up, the extremities, being abruptly bent, necessarily separate, and are so contrived that they may be made to grasp the stone. These ends are notched into strong teeth, and are capable of breaking and crushing a calculus.

To this instrument the Baron Heurteloup joined two contrivances of very doubtful utility. The one, a chair, to which the apparatus, the extremity of which was in the bladder, is firmly screwed!—a very alarming piece of machinery, and certainly to be resigned. The other was more ingenious: a heavy

vice is firmly screwed to the lower or further division of the instrument, whilst the other is struck with a hammer; the blow of the hammer strikes down the one part of the instrument upon the other, and the stone being between, is broken. The vice attached to the lower portion receives the impetus, and saves the bladder.

This instrument received its last improvement from a London workman, by the substitution of a screw and lever for the hammer.

Let us now consider the effect of these instruments, and the degree of safety with which they may be used.

Whoever knows the constitutional peculiarities of patients under the use of the bougie for stricture; whoever has had experience of the effects of using too large an instrument, and forcing it into the bladder, will ask himself whether these very rude operations can be done with safety? Sitting in a committee of medical men in London, Tell me, said I to my neighbour on the right hand, have any of your friends died under this operation? "Yes, I am sorry to say, two." And turning to my friend on the left, Have your patients suffered? "I have lost three." Then, why should not the world know it? Why let society suppose that here is a new, a bloodless, and a safe operation, when more men have died in a given time from lithotrity than lithotomy?

Great praise is due to the men who have ingeniously contrived these instruments; but we must not go with the million irrationally. The most grievous accidents result from these operations. The sharp fragments of the stone stick in the prostate and neck

of the bladder. They obstruct the urethra, and give great pain, and endanger total obstruction. When the stone is destroyed by successive operations, the neck and interior surface of the bladder are permanently hurt. If too much be done at once, or the instrument be opened too largely and abruptly, inflammation, fever, and coma result.

The instruments fail—a blade has broken in the bladder—the blades have been bent back, so that the instrument could not be extracted without cutting into the perineum, and closing the strong forceps—a stone gets entangled between the blades near their angle, and cannot be disentangled, and the instrument cannot be got out unless the bladder be cut into, and the stone picked away.

These are facts which ought not to be concealed, and for exposing which I have been blamed; but not, I hope, by sensible and considerate men. I have, as officiating in a public hospital, considered myself under the necessity of crushing the stone, and all has gone on well and safely.*

Giving my most serious attention to the question, I must say these are great improvements—great additional means of affording relief are put into the hands of the surgeon—that one great advantage has been derived from the repute of these operations, men suffering from stone do not conceal their condition, but come early to consult their surgeon, having learned that there are other means of obtaining ease than by cutting. The operation is to be prac-

* The instrument, which I selected from many, I afterwards found to be that used by Mr Fergusson.

tised where there are small stones. These may be crushed, and washed away with safety. But the difficulty of dealing with large stones is the same as formerly; they should not be attempted to be crushed with these instruments, but the operation of lithotomy preferred.

My remarks on this subject, when the cases were still before me, you may see in my Clinical Lectures.

The Extraction of Small Stones from the Urethra.

Have no hesitation in cutting upon these when they are forward in the perineum; if sticking just within the mouth of the urethra, the lip may be slit open to relieve them. If the stone be near the neck of the bladder, there is an excellent and simple instrument invented by Sir Astley Cooper. The method of using it is this: 1. Sound and ascertain the exact place of the stone with the urethra probe, and measure off the distance on the forceps. 2. Introduce the forceps down to the stone. 3. Push down the wire with your thumb, and by the opening of the blades expand the urethra just anterior to the stone. 4. Make the patient strain and forcibly make urine; the stone will be sent forwards within the grasp of the instrument, when you withdraw it slowly and cautiously, lest you lose your grasp, or cut the membrane of the urethra with the stone.

CHAPTER III.

ANEURISM.

Of the Operations for Aneurism.

Read Dr Hunter's paper, Medical Observer and Inquirer, vol. i. p. 323, and the succeeding volumes on Aneurism of the Aorta.

ANEURISM in its worst shape is a terrific disease. Aneurism of the aorta, for example, when occupying the chest, and pressing on its contents; the tumour pulsating with a blow like that of an engine; then rising visibly, gradually increasing, and suddenly bursting with a force that sends the blood to the ceiling!

Again, in the extremities the tumour is with equal certainty fatal, if left without timely aid, and thereby imposes on the surgeon an extraordinary responsibility. You must therefore desire to know its nature, and what can be done to avoid such an impending calamity as death by hæmorrhage.

An aneurism is a tumour of arterial blood.

I do not say a *pulsating* tumour of arterial blood, although it is generally so denominated, because by imagining that an aneurism must pulsate, great errors have been committed.

Arnaud saw the aneurism of the thigh opened for an abscess, *par un tres grand praticien*. See also Palfin, and Paré.

Again, there are tumours which pulsate and are not aneurisms. There are pulsations in the abdomen, which,

in conjunction with the most experienced surgeons, I have taken for aneurisms when there proved to be none.

The position of a tumour in relation to an artery will give it a pulsation ; and an artery, *e.g.* the carotid, turning over the lobes of an enlarged gland, will produce a very deceptive pulsation.

The distinctions of aneurismal tumours are these : We have true and false aneurism, making the real and important distinction. The first is from disease, the latter from accident.

The term diffused and circumscribed may be given to either, since a diseased artery may burst out so suddenly as to drive the blood abroad in the cellular membrane ; or may give way so slowly as to permit the cellular membrane to be condensed so as to circumscribe the tumour.

So may it happen in the case of a wounded artery, *e.g.* when the lancet in bleeding in the arm touches the brachial artery, the wound being small, and the integument carefully pressed down, the blood is confined, and in the end a circumscribed tumour is formed ; whereas, if the artery be more largely wounded, the blood is diffused.

Having got rid of these terms, indicative of the *conditions* of an aneurismal tumour, we attend to true aneurism, our proper subject.

True aneurism,—that which arises from previous disease of the coats,—is marked, 1st, By the abruptness of the tumour ; 2. By the presence of coagulum or clot within it ; and these are necessary accompaniments of each other.

The state of the artery common in old age, when premature, is that condition of the coats which gives rise to aneurism. From thirty-five to fifty is the age most subject to aneurism, when the vigour of exertion is undiminished, and the artery prematurely weakened. Aneurism is not the disease of old age.

The coats of the artery are thickened, and unusually brittle; they easily separate into layers; yellow spots of concretion (improperly called ossification) form between the inner and muscular coats. The fine elasticity of the vessel so perfectly adapted to sustain the heart's impulse, is lost, and the artery dilates.

I have elsewhere said, that the ligature of an artery is a subject of the first interest,—not on account of tying the artery of a stump, or an artery accidentally opened, but because of the diseased state of the coats when you are under the necessity of tying it for aneurism. I have seen the artery give way under the ligature during the operation. I have seen the iliac artery burst among the operator's fingers; and I have seen the artery give way from the pressure of the tourniquet, applied on the occurrence of secondary hæmorrhage.

The general dilatation of an artery is not an aneurism, although, looking to its consequence, we may call it *aneurismal*. The inner coat, which is that which sustains the artery, chips and breaks; then an abrupt tumour forms, then also the coagulum forms, and it is a true aneurism.

When we dissect an aneurism on the outside, it appears to be continuous with the natural coats of the artery. But on laying it open, you perceive the abrupt termination of the inner coat.

Joined to this you find the clot; for, as we have explained (in the pages on the spontaneous stopping of hæmorrhage), the inner coat alone has the property of preserving the blood fluid, and no sooner is the inner coat chipped, than coagulum forms. This coagulum is deposited layer within layer; and it is dense, and, as it were, impacted by the force of internal pulsation; so that if it does not prevent the giving way of the coats altogether, it delays it.

Aneurism forms most frequently where the pulsa-

tion of the heart is most forcible ; necessarily in the turns and angles of the tube, and therefore, most frequently of all, in the arch of the aorta.

Surgery can do little in these cases of internal aneurism. You put the patient on restricted diet: you take blood from the arm in small quantities, and frequently. When the tumour becomes external, and the patient desires the prolongation of life in these sad circumstances, a sort of artificial sac of plaster may be made to cover the tumour about to crack or burst.

More commonly the death, in these internal aneurisms, is by the general weakness, or by pressure on neighbouring parts, or the tumour bursts into the lungs or trachea, or œsophagus ; often it presses on the latter tube, so as irrecoverably to obstruct deglutition.

The Stages and Natural Consequences of External Aneurism.

When aneurism forms in the great arteries leading out of the trunk, we may observe the consequences, and these consequences become here subjects of deeper interest, as we must interfere, by operation, to prevent the catastrophe which is otherwise too sure to follow.

1. At first we find a small tumour which pulsates powerfully. It is compressible, and can be emptied.
2. It becomes larger and harder, cannot be compressed, and is attended with pain. The pulsation is still distinct.
3. It enlarges, but not uniformly ; a new swelling, pulsating distinctly, forms ; the older portion of the tumour beats less distinctly.
4. The

tumour enlarging, inflames; there are small black spots on the integument; it sloughs, bursts, and there is an alarming hæmorrhage. 5. The means of arresting the hæmorrhage are temporary and ineffectual; there are repeated hæmorrhages, and the patient dies.

All this misery is consistent with general health. Is nature, then, altogether passive? Is there no natural process of cure?

Natural Cure. Method of Valsalva.

The spontaneous cure of aneurism is a thing so rare,—so little to be depended on,—that it does not enter into the computation of the surgeon. Still thus it sometimes happens.*

When the tumour has assumed a great size and alarming aspect, when it is to be expected that either more extensive diffusion or actual rupture must take place,—it stops pulsating; the limb becomes cold and benumbed; the constitution sympathizes with some great change; the patient is faint, and shivering, and sick. After a period of great alarm, the limb becomes warm; its sensibility returns, but happily not the pulsation. On the contrary, the tumour is hard, begins to diminish, and there is a natural or spontaneous cure!

The rationale is this: The artery having originally given way on one side, as the tumour enlarges, and as additional

* Aneurism spontaneously cured, see

Guattani de Aneurismatibus.

Ford on Popliteal Aneurism, Lond. Med. Journal.

Sir Everard Home, Transactions of a Society for the Improvement of Surgical Knowledge. So Petit, Baillie, Pellitan, &c.

An interesting case under Mr Lynn in the Westminster Hospital, Transactions of a Society for Improvement of Medical and Surgical Knowledge, vol. ii. p. 268.

layers of coagulum are added, the trunk of the artery is more and more pressed and displaced; so that at length the stream of blood, instead of being directed from the upper into the lower portion of artery, runs into the sac, where, coagulating, it presses against the lip of the communication between the artery and the sac, which, from that time acting like a valve, stops the flow of blood altogether. The collateral vessels then take upon them the office of supplying this lower part of the limb, and there is a final derivation of blood from the aneurismal tumour.

A very anxious question is to be solved: Are there means which may eventually lead to this spontaneous cure? Can we imitate it? And this leads to the *method of Valsalva*. Valsalva, be it remembered, was the master of Morgagni, a responsible name. The method is this:

In circumstances where it is impossible to operate, the practice is, to reduce the patient's strength, and the force of circulation, so as to induce the formation of coagulum and the shutting up of the main vessel.

He is to be bled again and again,—he is to be fed, or rather starved, on a little weak soup,—he is to be reduced to that condition of weakness, that he cannot raise his arm over his head. In addition to this, the limb is to be covered, and benumbed with cold spirituous lotion or ice upon the tumour. In these circumstances, it has occurred, that entire coagulation has taken place in the tumour, the phenomena which I have described as attending the spontaneous cure.

It might be imagined that, when it was once ascertained that, in all cases of external aneurism, the collateral arteries, that is, the branches from the main trunk, were capable of carrying on the circulation, nothing was more obvious and practicable than to tie the trunk.

But in tying the trunk, what becomes of the collateral arteries? This leads to the great principle of

all—the *incision* for aneurism. If we could stop the main artery by any means which would leave the limb unaffected, uninflamed, then success would uniformly attend our efforts. But unfortunately, as in cutting down upon the artery, we excite inflammation in the limb, that inflammation produces swelling, and that swelling *compression of the collateral arteries*, and then comes mortification.

This course of reasoning shews also the extreme difficulty of curing an aneurism by compression. You cannot compress the main artery by any contrivance which shall not at the same time either compress the collateral arteries, or produce oedema, which is the condition of the limb most to be dreaded.

It was at one time a favourite conception of mine, that, in cases when it was difficult or dangerous to cut down upon and tie the artery above the tumour, we might tie the artery below as it passes out. I found that the idea had not only been entertained, but acted on. I feel impressed, however, that the operation has not been done with the nicety which is necessary to success in all operations on the artery.

When a true and circumscribed aneurism bursts (if it be not still circumscribed, in which case I have called it a secondary aneurism), and the blood is diffused through the limb, the operation of Mr Hunter will fail. When I have witnessed the attempt it has failed, and amputation has been resorted to. We have an instance from Mr Cooper, *Med. Chir. Trans.* vol. xvi.

Popliteal Aneurism.

The patient complains of pain, stiffness, and numbness of his leg. A tumour occupies the cavity be-

hind the knee, and between the hamstring tendons. There is more of general fulness than of a prominent tumour, and a dull elastic beat is conveyed to the hands when you grasp the limb at this part. The patient tells you, very probably, that he felt a sudden shooting pain on leaping a ditch, or after a very long walk; and that from that time to the present, there has been a dull pain shooting to the sole of his foot, and some degree of swelling.

You remember the nature and confines of the popliteal cavity, the bone anteriorly, the hamstring tendons laterally, and the fascia behind and superficially. You recollect the relation of the artery covered by the vein and popliteal nerve, and how deeply seated it is. You at once see the consequence of an aneurism forming here—the compression of the nerve and consequent numbness, the compression of the vein and consequent œdema.

The Old Operation.—The old operation was performed thus:—1. The tourniquet was used; the patient was laid on his stomach, the back of the thigh consequently exposed. 2. An incision of six or eight inches was made over the popliteal cavity; the fascia was opened, the fat dissected through. 3. The sac of the aneurism was opened, and the coagulum removed. 4. The tourniquet was slackened, and the blood flowing shewed the mouth of the artery. 5. A needle and ligature was passed around the artery above the rupture, and another was necessary below it.

From the principles endeavoured to be laid down, it is obvious what must have resulted from this procedure—general tumefaction, impediment to the free action of the collateral branches, and mortification.

The Operation of Hunter is performed on the fore-part of the thigh, where, by a comparatively small incision, you find the femoral artery before it has perforated the triceps.

Sir Everard Home said, Mr Hunter changed the mode of operating in order to tie remote from the part that was

diseased. Sir Astley Cooper makes his motive that he might leave the diseased parts undisturbed, and hence avoid constitutional irritation. The true effect, whatever may have been the motive, is to tie the artery without causing a general swelling of the limb.

The *instruments* are very few: a scalpel with ivory handle, a blunt hook, directory, and an eyed probe and ligature, or aneurismal needle. The patient reclines.

1. The *incision* must be in length proportioned to the depth of integument, from three to four inches. Sir Astley Cooper says in the direction of the line of the sartorius muscle. I would rather advise that it be made in the line of the artery, obliquely crossing the upper edge of the sartorius one inch.

If you cannot see the muscle in the aneurismal leg, or do not choose to be so free with it, you can bend the other thigh, and so cause the action of the sartorius; mark its exact place there, and, by comparison, note the spot where the artery crosses the muscle in the thigh to be operated on.

If you cut, as Sir Astley Cooper advises, take care of the saphena vein, which will appear at the inner extremity of the incision through the integuments.

2. Having made the first incision, you come upon the superficial fascia, which is very thin over the sartorius.

Look well that it be the edge of the sartorius which is at the lower extremity of your incision. I have seen sad mistakes, by the surgeon turning up the fibres of the triceps instead of the sartorius!

3. Turn up the upper or inner edge of the sartorius a very little. The fascia is stronger beneath. You find tendinous fibres which pass over the sheath of the artery. Scratching these, you come on the

proper sheath: you may pass the directory under those fibres of the fascia, and cutting on it you have the appropriate sheath of the artery.

If the operation be featly performed, on opening the sheath you come directly upon the artery. The saphenus nerve is remote, and the femoral vein is under or behind the artery here. Sir A. Cooper says he has seen the nerve included in the ligature,—a sad error. I have seen the vein perforated with the aneurismal needle.

4. When fairly within the proper sheath, and close upon the artery, you will have no difficulty in passing the probe or the blunt needle round the artery. But if you have not gone close upon the artery, you will have to bore and push to the danger of hurting the vein.

The reader will peruse with surprise a paper in the 2d volume of the *Trans. of the Phys. of Ireland* on "Venous Inflammation." "It was found that the crural vein, lying behind and in close contact with the artery where the operation had been performed, had been wounded by the needle." Death was occasioned by inflammation of the veins. Again, and in another case, "the ligature had passed through the vein, and its coats were found in a suppurating state."

I have been present when the blood burst out from the femoral vein on passing the needle. The cause is a too timid dissection of the artery, and boring through external to the proper sheath.

Scarpa's mode of raising the artery out of the wound between the finger and thumb, is quite out of the question.

I have used a ligature of four moderate threads for this operation. Tie a single knot, and tie again. Separate the threads of the ligature, and cut all off but one thread. Bring the lips of the incision together with short straps of adhesive plaster. Lay the patient in bed, and enjoin perfect rest; ward off

cough ; avoid straining by giving mild laxatives ; keep a warm stocking on the leg, but put no warm bottles to his foot.

There is no use of keeping the two ends of the ligature here, as you have no intention of twisting them. The ligature comes away from the 12th to the 16th day. You may see if it be loose, but do not pull.

It was Mr Abernethy's proposal, as well as Mr John Bell's, to tie the artery twice, and divide it between the ligature. This is not the worst proposal, but it is properly objected to, as requiring more disturbance of the wound, and leaving two ligatures instead of one.

They thought by doing this, that they brought the vessel (by letting it retract) into the situation of the artery on the stump after amputation.

They, as well as others, missed the main distinction between an artery tied in aneurism and in amputation. There is an influence of the living extremity exercised on the arteries which supply it. Whilst in aneurism, there is present that excitement on the circulation which carries the blood with force up to the ligature, in the amputated limb this excitement is entirely removed, and the activity of the arteries subsides.

Of Inguinal Aneurism.

This aneurism forms in the bend of the thigh, just under the groin, and in its progress comes quite up to Poupart's ligament. Operate as soon as you can obtain consent after the case is declared. The danger is greatly increased if, by the bursting of the sac, a secondary aneurism is formed.

We are indebted to Mr Abernethy for the improved operation on this aneurism. He had got engaged with one of Sir Charles Blicke's cases, in which he operated, the tumour being about to burst. He got his hands in the blood of the sac ; found it ne-

cessary to cut up Poupart's ligament to get at the artery; and, as a natural consequence of all this, hæmorrhage came on the 15th day after: the artery was tied again—burst again! Such is ever the consequence of those bloody operations on an aneurism where the sac is opened. Mr Abernethy, urged by sad experience, resolved on future occasions to tie the artery above Poupart's ligament. Although in his first operation he failed, yet, by seeing the cause of failure, and correcting his method, he succeeded in establishing the operation.

The Operation.—1. An incision is made through the integuments three inches and a half in length, in the line of the external iliac artery, as if you were about to cut into the abdomen; which, however, it is your purpose carefully to avoid. The lower end of the incision terminates at Poupart's ligament.

Sir Astley Cooper, and after him Mr Key, made a semi-circular incision above Poupart's ligament, with its concavity towards the umbilicus, including the space over the inner abdominal ring.

2. The second incision cuts through the tendon of the external oblique muscle, leaving entire the Poupart ligament and lower pillar of the ring.

3. Raise the margin of the internal oblique; put your finger into the internal ring, and push inwards the spermatic cord.

You are on the outside of the peritoneum, and you carefully push up that membrane. This is an essential part of the operation. I have witnessed the operation fatal by peritoneal inflammation, in consequence of a very small wound of the membrane.

4. You will feel the artery pulsating, but do not

yet attempt to put a ligature round it. The fascia still covers the artery, (here your assistant must be active in holding aside the integuments): you scratch, and by little and little, open the fascia. You have still the proper sheath; it is to be opened in the same way.

A gentleman in operating says, "I endeavoured to separate the vessel, but could not succeed either with my finger or the point of the aneurismal needle; with the scalpel, therefore, I made an incision on each side of it, and then," &c.—*Med. Chir. Trans.*, vol. xi. p. 399.

This will always be the case unless these two things are attended to—to scratch and open the iliac fascia, and to lift the thigh and relax the parts.

5. Now make the assistant raise the thigh, whilst you with your fingers and thumb take hold of the artery, and without dissecting further, you can pass the blunt aneurismal needle under the artery, and so tie it.

You may be embarrassed by the long lymphatic gland that lies within Poupart's ligament; in that case push a little higher.

Mr Abernethy dissected on the two sides of the artery; it is better to touch the sheath, and touch again and again directly over the artery. The difficulty he encountered was obviously from not getting within the sheath.

Be not too rude in fingering and lifting the artery. An aneurism in the groin implies a very diseased state of the arterial system; and I have seen this artery give way between the operator's fingers. Pay special attention to the vein on the inside. If opened, it would prove more disastrous than wounding the artery.

Mr Cline's son proposed as an improvement, that we should tie below the giving off of the epigastric and circumflex arteries. This was treading backwards. The advantage from Mr Abernethy's mode of operating is, that you have the whole length of the external iliac artery above your ligature, without a branch going off.

The Operation on the Internal Iliac Artery.

This operation was first performed by Mr Stevens; after him the operation was performed by Mr Atkinson of York and S. Pomeroy White. (See *American Journal of the Medical Science*, February 1828.)

These aneurisms of the hip can hardly be occasioned by disease of the artery (gluteal or ischiatic). I imagine they result from falls and kicks.

See that you do not mistake some great tumour projecting from the pelvis, and receiving an impulse from the arteries, for an aneurism. The operation has been performed under this mistake; therefore take care it be not done again.

The operation on the internal iliac artery, or on the common trunk, is a pure piece of dissection. The surgeon should study these operations on the dead body. The method and the principle are the same as in the last operation; the incision of the abdominal muscles must be larger,—the peritoneum must be pushed up to a greater extent. It carries with it the ureter, and care of that duct is the only additional caution I have to give.

Carotid Aneurism.

The aneurism of the carotid artery takes place at the bifurcation into the external and internal carotids, just where the angle presents opposition to the stream. You perceive then how close the tumour must be upon the throat. From this circumstance arises the peculiarity of the case.

When a student in this Hospital (Edinburgh), I informed my brother that I thought in the Physicians' Ward they were poulticing an aneurism of the carotid artery, and I drew his attention to it. In that case I observed an important fact: the woman died of suffocation. I made the dissection.

Many years after this, in London, when there was great talk among our students of Sir Astley Cooper being about to tie the carotid artery for aneurism, I said the woman would die of suffocation, and so she did. In that case the report proceeds: "Immediately after the operation, she was seized with a fit of coughing, which continued half an hour." At a farther stage, "the wound opened, the tumour increased and was painful; she had a violent cough, great difficulty of swallowing, and a high degree of constitutional irritation."

Sir Astley saw the reason of this misfortune, which I hope you also perceive,—operating too late. By operating early, whilst yet the tumour was small, he succeeded, and established the operation.

Some confused ideas of danger from tying the carotid, were entertained in consequence of Mr Abernethy's case. Mr John Bell had tied the carotid in a case of aneurism from a puncture with a pen-knife.

Your course of reasoning upon the operation for carotid aneurism will run thus: 1. The ligature of the artery in case of aneurism causes a certain excitement in the tumour. 2. Without this addition the aneurismal tumour, by pressing on the larynx (and it may be, on the laryngeal nerve), endangers suffocation. 3. The excitement of the operation,—the disturbance of a large tumour causes an increase of pressure, perhaps involves the parts in inflammatory action, and causes suffocation. The corollary, therefore, is,—operate early.

Operation.—The instruments are,—the scalpel,

blunt hook, and aneurismal needle,—the assistant has his flat hooks to hold aside the integuments. These are all that are necessary,—a sensible man will, besides, have the usual resources against untoward accidents.

1. An incision two inches and a-half in length, along the anterior edge of the sterno-cleido-mastoideus muscle.

The length of the incision must be left to the good sense of the operator; let him keep as free as possible from the tumour. It is always a misfortune when the inflammation of the incision communicates with the tumour.

2. The second incision cuts the platysma myoides, which should be opened up to the full extent of the skin.

3. Relax the mastoid muscle, use the handle of the knife and go under it. You come upon the omo-hyoideus. *Scratch* so as to come upon the common sheath, just below the edge of that muscle.

4. In one sheath of cellular membrane, the artery jugular vein and par vagum lie. You feel the pulsation; open the sheath on the side towards the trachea,—so you will avoid the jugular vein, which is on the outside.

If care be not taken, the jugular vein swells up. Thus Sir A. Cooper:—"The motion of the vein produced the only difficulty in the operation." Again, "It sometimes presented to the knife tense and distended, and then as suddenly collapsed." You understand this to be the effect of respiration, in the alternate freedom and resistance to the descent of the blood. The finger of the assistant should prevent this occurrence.

5. By scratching with the point of the knife, the back turned, you open the sheath; and when this is

done you will have no difficulty in passing the blunt hook round the artery ; after which you pass the blunt needle and ligature, and tie as in former cases.

Your safety is in keeping close to the artery, by which you leave the great 8th nerve, in its proper division of the cellular sheath, unexposed. The recurrent is out of the way —out of the question. You do not interfere with the *descendens noni*.

Axillary Aneurism.

Here, too, the operation must be done early, to give hope of success. I consider it by much the most difficult and hazardous operation received into the order of acknowledged operations.* It has often failed, and good surgeons have stopt, *re infecta*. It is not perhaps considered that much must depend on the circumstances ; for example, when the tumour is large, and the shoulder pushed up, the artery must relatively be the deeper.

Operation.—Your aim is to expose the artery as it emerges from the *scalenus anticus* muscle. 1. The incision through the skin and *platysma myoides* runs from the outer edge of the *sterno-cleido-mastoideus* to the anterior edge of the *trapezius*, parallel to the clavicle. The upper edge of the integument may be cut in a line perpendicular to the first, so as to give more room in this difficult dissection ; nor need you

* The subclavian artery successfully tied in a case of aneurism of the axillary artery, by Mr Key, *Med. Chir. Trans.*, vol. xiii. p. 1 ; by Mr Fergusson, *Edin. Med. and Surg. Journal*.

spare a few fibres of the clavicular portion of the mastoid muscle. 2. The fascia here must be cut through, and it is an irregular one, being mixed with adipose membrane: you take care of the external jugular vein, which falls in amongst it. 3. You meet the lower edge of the lower belly of the omohyoideus; expose it. It is to be regretted if you open the supra scapular artery; if you do, it must be immediately tied. In your further progress, take the scalenus muscle as a guide, and follow it to its attachment to the rib. You then feel the artery. The remaining part of the operation is performed as in other cases of tying a large artery. Keep close to it in passing your ligature.

It has been proved possible to mistake the nerves for the artery; they come down from above, and are behind the artery.

We have lately had an operation of tying the *arteria innominata* in the Hospital. I came too late into consultation, or I would have protested against the operation. It was dexterously performed by Mr Lizars, but the patient died.

Aorta.

Mr John Bell proved that the aorta being obstructed, the collateral vessels were sufficient to the circulation. Sir Astley Cooper tied the aorta. Mr James, *Med. Chir. Trans.*, vol. xvi., repeated the operation, obviously under the idea that he was doing a very meritorious act. The case needs no comment. Let me add, that Mr John Bell, by his instance, was

enforcing the doctrine, that whatever artery could be tied the circulation would be carried on. He never contemplated cutting into the abdomen and turning out the intestines to tie the aorta.

Were it proper to repeat this operation, it might be done differently.

CHAPTER IV.

ACCIDENTS FROM BLEEDING IN THE ARM.

When you bleed in the arm you select the most prominent vein,—the median, basilic or cephalic vein. In very fat people, the bending of the arm keeps the former more distinct and superficial. Take the left arm; smooth the skin as you apply the ribbon; place yourself on the left side of the patient, who reclines, the arm being held horizontally. Turn the arm round, so that the orifice you are about to make presents to the cup or basin. The band is two inches above the point you are to strike. You press the vein below, which distends and keeps it steady. You do not prick the vein, but pass the lancet into it on one side, and obliquely across it. The point of the lancet should make a part of a circle.

When you desire to stop the bleeding, undo the band or ribbon, and press your thumb an inch below the bleeding orifice, so as to stop the course of blood to it: wipe very clean; stretch the little cut in its length so as to bring the lips together; place the compress of lint so as to keep the lips together; apply the bandage by turning it above and below the elbow in figure of 8; bend the arm gently; put it in a sling, and enjoin the patient not to use it.

The most common mishap is thrombus, from first opening the vein and then turning the arm, so that the orifice in the skin does not correspond with that in the vein.

If the patient's constitution be irritable, the orifice may inflame; the inflammation is, however, more commonly caused by moving the arm too soon. The out-patients of an hospital bled in the surgery, complain of a foul lancet, when the cause is their own carelessness.

The inflamed orifice must be attended to, as it may lead to serious consequences—inflammation, pain and contraction of the arm, or, worse still, inflammation of the vein.

The lymphatics may be inflamed in consequence of the orifice festering; then there will be tenderness, and, it may be, suppuration of the axillary glands.

As to the pricking of a nerve, the subject is very obscure. I have known a patient start in bleeding from an indescribable sensation, extending from his shoulders to his finger ends. I have known a patient attribute his state (a mild form of tetanus, the attack of which commenced with a sensation of water trickling down his arm) to a nerve pricked in bleeding. These certainly are more like the effects of an injury to the nerves than the symptoms narrated by Mr Abernethy. I cannot countenance the idea of dividing the nerve supposed to be punctured.

Aneurism from Bleeding.

When the surgeon bleeds in the median basilic vein, he is directly over the brachial artery, the fascia only intervening. A blunt lancet in the hands of a *bleeder*, which passes with difficulty and starts through, or the sudden start of the patient, may endanger the pricking of the artery. But there must be something awkward in the operation, as the vein must not only be transfixed, but the fascia and the coats of the artery also.

When this happens, the blood will flow florid and per saltum, and be with some difficulty restrained, so that the compress is put down firmly.

Mr Syme, in his excellent work *The Principles of Surgery*, p. 97, hints at the high bifurcation of the artery, and the superficial course of the radial artery, exposing it to be mistaken for a vein, and opened as such. I have not seen such an occurrence.

When the tumour forms, it has the cicatrix on its centre. It is at first compressible, but at length the connections under the fascia being broken up, and the coagulum forming and impacted, you cannot compress it; the tumour is now more diffused, occupying the bend of the arm, and the arm and the fingers are contracted from the distention of the fascia.

Owing to the smallness of the puncture made in the artery, and the firm bandaging, there is time given for the cellular membrane to become condensed, so that the aneurism is *circumscribed*.

A question arises out of this: Shall we imitate the operation of Hunter, in simply tying the artery above the tumour, or shall we open the sac of the aneurism, and treat the case as a wounded artery, tying the artery above and below the wound? I have seen it successful in both these ways. I incline to the operation by opening the aneurismal tumour.

Operation.—1. Apply the tourniquet. 2. Make an incision over the face of the tumour; the fascia is exposed, splendid in its fibres over the mass of coagulum. 3. Penetrate and slit up the fascia, (always thinking of the possibility of there being a high bi-

furcation). 4. Roll out the coagula ; sponge out the chasm ; the bottom of the sac you find dark and irregular from driven blood ; you hardly expect to see the artery. 5. Let the assistant unscrew the tourniquet, when a jet of blood flows from the orifice ; at that moment introduce the probe into the orifice, and screw the tourniquet. 6. Lift up the artery by means of the probe ; pass a double ligature under it ; cut off the needle, making two ligatures ; push the one above the orifice, the other below it, and then tie above and below.

It is enough if I say that I have seen a dive made with a sharp needle, include both nerve and artery,—the patient died.

Do not dissect and separate the artery. It is wrong on principle ; and the puncture is so near the going off of the radial and ulnar arteries, that you might cut one of them across.

You lay out the arm in an easy posture ; with light dressing ; the wound must suppurate.

The operation of tying the trunk of the brachial artery above the tumour is a simple and masterly one. 1. Let the incision be made free of the aneurismal tumour, of two inches in length, and direct on the pulsating artery. 2. When you have dissected down upon it, you feel it, and see it pulsating round, distinct and white. But take care,—it is the radial or median nerve you see ; the artery is under it, nearer the bone. 3. Hook out the artery with the blunt hook, from between the nerve and vein, and put a single ligature round it. Compress the artery, and observe the effect on the aneurism ; then tie it.

The vein over the artery is that formed by the junction of the basilic and deeper veins.

Varicose Aneurism,

Sometimes called Aneurismal Varix, is also a consequence of transfixing the vein in bleeding in the median basilic, and opening the artery. For when the surgeon is alarmed by the difficulty of stemming the flow of blood, he puts down the compress with more than usual firmness. The effect of this is to bring the orifices made in the two vessels closely together, whilst the surrounding parts adhere. Perhaps a clot for the time keeps the passage open. However that may be, a communication being formed, and the impulse being taken off from the artery by the easy passage of the blood into the vein, the varix or dilatation of the vein is the consequence.

I believe, however, that the case is often somewhat different. It is thus, at least, that I have found it. An aneurismal tumour forms under the fascia, and in immediate contact with the artery. This aneurismal cavity communicates through the fascia with the vein. In this latter case, the dilatation of the vein is not so considerable, nor does the dilatation extend so far into the neighbouring veins.

You know the case by the pale blue tumour of the vein, with cicatrix in the centre. You can empty it. If, on emptying it, you compress the veins of the fore-arm, and put your finger on the communication with the artery, the tumour does not rise; but it rises on removing the finger. On putting your ear to the arm, you hear a trilling sound of the blood flowing from the artery into the vein.

On farther examination, you will find that the brachial artery beats impetuously, and that it has become both larger, and much more tortuous than natural.

When the brachial artery divides high up, the radial artery takes a course not only under the median basilic vein, but very superficially, having only a few fibres of the fascia covering it. This artery is thus much exposed, and sometimes forms the communication with the vein.

You should let this kind of aneurism alone; not even a compress or bandage to be used. From what we have learned of the aneurismal tumour, we perceive that, in the varicose aneurism, it is the free exit of the blood, the ready passage it has back to the heart, by the vein, that prevents the walls of the aneurism from dilating and becoming a common aneurism.

If an operation is to be performed, it must be an incision down to the punctured artery; which must be tied above and below, according to the rule laid down for wounded arteries (see pages 67, 69). By tying the artery on the inside of the elbow, and above the tumour, I lost my patient,—the arm mortified.

The artery being very easily cut upon and tied, you might naturally think, as I did, that it would only have the effect of diminishing the force of circulation, and secure the patient from the chance of rupture. But the effect is an immediate loss of circulation in the arm and hand. The reason is this: In the common case of an artery tied in aneurism, the blood flowing by the anastomosing vessels to the artery below the ligature,—these vessels are full of blood, and work to the supply of the limb. But in this instance, the blood of the artery having a free communication with the vein,—that tension and fulness necessary to

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their activity never takes place ; the hand and arm become immediately pale, a painful tingling succeeds ; the nails and fingers become blue, and next day the arm is mortified ! *

* *Aneurismal Varix* has been produced by accidental wounds, which have transfixed both artery and vein ; for example, in the ham. A most extraordinary case spontaneously produced by the communication of the aorta and cava is given by Mr Syme.

CHAPTER V.

OF ANEURISM BY ANASTOMOSIS.

Surgeons confound aneurism by anastomosis with cutaneous nævus. Fungus hæmatodes also gives occasion to mistakes.

The term *aneurism by anastomosis* was [given by Mr John Bell, who first described the tumour; and any one who has seen and fingered the disease will acknowledge it to be a proper term.

During the last winter, a young gentleman came to Edinburgh with this tumour. I sent him to Mr Syme for consultation, and also as a good instance of the particular form of the complaint to which my brother had given this term. A colourless mass occupied the side of the throat and jaw, which you could gather with your fingers, soft and compressible, and which being so grasped gave a powerful pulsation to the hand.

I have had an example of the disease in a young lady's hand. The soft and woolly mass surrounded the wrist and thumb, entered into the interstices of the metacarpal bones, so as to form a communication between the portion of the mass which lay on the back of the hand and that in the palm.

The question in consultation (before her marriage) was, whether two arteries of the wrist should be tied? I gave it as my opinion that they should not.

This was outwardly and visibly an instance of the tumour which my brother has described as lying between the rectum and vagina.

This species of aneurism has no malignant character. It is not like a tumour properly. It is a con-

geries of arteries and veins, in which the union of their extremities is apparently so free as to communicate the impulse of arterial action to the veins.

I see from time to time what appears to be the same structure, with more of the venous or varicose character, and without pulsations.

Such a tumour may be treated as a *nævus* (See Tumours), when it is small and circumscribed; but as it has presented to me, extirpation was impossible.

Is it possible to arrest the growth of such a disease by tying the artery which feeds it? I fear not. In all cases the inosculations of the arteries are so free, and they enlarge so readily, that there is little hope of the vascular mass decaying by this process.

The practice is indeed of very doubtful propriety in any case of pulsating tumour. In consultation not long since, in London, on a tumour of the face, and quoting the advantage of tying the carotid artery as an instance of the effect of diminishing the force of circulation, I was met with the unanswerable remark, "I have that tumour in a bottle," and this was obtained by *dissection*: and so I fear it will be, that if any advantage be gained, it is only temporary, and we cannot destroy the disposition.

In the 15th volume of Med. Chir. Trans., p. 170, you will see that Sir Astley Cooper put ligatures on four arteries which supplied a tumour on the head, without permanently diminishing its volume.

Inflammation of Veins.

The inflammation of the veins is almost a new subject. It appears that many must have died of inflammation of the veins without a suspicion of the cause. Mr Hunter gave a beginning to this inquiry, as he did to many others. *See a paper in the Transactions of a Society for the Improvement of Surgical Knowledge*, vol. i., in which he shews how liable the vein is to inflame after bleeding, and with what formidable consequences. Sir Astley Cooper assigns this inflammation chiefly to the previous bad health of the individual, and to the irritation occasioned by the patient using the arm.

On the attack, the patient complains of tenderness, and requires the bandage to be loosened. There is pain on extending the arm; the lips of the wound pout; the veins of the forearm swell; the basilic and cephalic feel solid; then commence constitutional irritation and fever, and abscesses form in the course of the veins. The fever is of a typhoid character—the pulse feeble—the skin hot—the tongue brown—the respiration anxious—pain in the head and back—prostration—delirium.

On dissection, the appearances are—thickening in the coats of the vein—coagulable lymph and pus within them.

The veins in the stump after amputation are very apt to inflame. This is made an objection to tying the veins; but unfortunately the open mouth of a vein in a suppurating stump is fully as liable to inflame.

In Cooper and Travers' Surgical Essays, you will find them attributing the inflammation of the vein to the ligature. The patient, after amputation, has frequent rigors; the thigh is painful on pressure; a low fever succeeds, and delirium; the dissection exhibiting [diffused inflammation in the vein, with coagulable lymph extending to the heart.

See a paper in the 2d vol. of the Transactions of Physicians of Ireland. *Read my former colleague Mr Arnott's paper, Med. Chir. Trans., vol. xv. part 1.*

There succeed to the surgical authorities the reporters of some very important facts. My old colleague, the late James Wilson, found pus in the veins of the uterus, and the cava obliterated, in three women a few days after parturition.

Phlegmasia dolens is by some attributed to the inflammation of the iliac veins, in consequence of inflammation of the uterus. Dr Davies first observed the inflammation in these veins, and Dr Lee traced it to the uterus. But our experienced and acute Professor of Midwifery says they are confounding two distinct cases—*phlegmasia dolens* and crural phlebitis.

I confess the subject is to me still obscure, and the puerperal fever, *phlegmasia dolens*, and phlebitis, require further elucidation.

CHAPTER VI.

DISEASES AND INJURIES OF THE NERVES, AND THE OPERATIONS PROPOSED FOR THEIR RELIEF.

I must refer my reader to my volume on *The Nervous System*, both for the anatomy of the nerves, and for many interesting circumstances connected with their pathology, which cannot be introduced here.

When a nerve is divided across, it cannot be perfectly restored; it unites, but a thousand chances are against its union—filament to filament. Sensibility is in part restored, but it is neither a perfect nor a natural sensibility which returns; a somewhat painful vibration is conveyed, instead of the perfect sense of touch.

Nervous matter appears to be secreted between the extremities of the divided nerve with a knot or degree of tumour, and this part is very sensible; it requires to be protected.

The nerve cut across in amputation undergoes a remarkable change. (See *Amputation*.) Coagulable lymph is deposited in the coverings of the nerves. The great size of these tumours on the nerve mark something peculiar in the membranes, or unusual excitement.

Inflammation of a nerve is a very serious complaint. Mr Cline said to me in consultation, "I have known a man die from inflammation of the

ischiatric nerve." A nerve may be inflamed by direct injury—a bruise. A gentleman came to me in the present season, whose narrative of symptoms gave the idea of "a creeping palsy" on one leg and thigh. I found he had been thrown from horseback, and had bruised the ischiatic nerve twelve months before. One can believe what Portal affirms, that a child falling from a height bruised his schiatic nerve, and that thence arose atrophy of the extremity. (Portal, vol. iv. p. 297.)

Formidable disease of the nervous cord may be produced by a bruise. A ship-carpenter fell from the side of a ship: he was caught by the ham on a bolt which extended from the side of the ship, and hung there. The remote consequence was, disease in the body of the popliteal nerve, attended with excruciating pain in the sole of the foot!

Inflammation of a nerve—a circumscribed inflammation of a nerve—may be produced by constitutional causes. I have found the most excruciating pains in the course of the distribution of four distinct nerves at the same time; pains in the course of the ulnar nerves of both arms; pain in the course of the fibular nerves on both legs, and to a degree that made the sufferer howl! In all these nerves I found a spot tender when pressed.

The nerves appear to be more extensively or generally the seat of pain, proceeding from inflammation. Miss F—— I visited in the most pitiable condition. She lay coiled up and paralytic, and with sloughing through want of sensation, while suffering the most extreme agony in the whole frame, and in which condition she sunk.

I entreat attention to the seeming contradiction of insensibility and extreme pain in a part; for that is the character of actual disease in the nerve as distinguished from *Neuralgia*.

The ischiatic nerve is more frequently the seat of pain than any other, if we except the fifth nerve of the head. 1. There is pain from inflammation in the nerve; (that inflammation may be from a cause constitutional, or from injury). 2. The nerve may be involved in inflammation proceeding from the hip; (hence the confusion under the head of *morbus coxarius*).

The schiatic nerve is especially subject to inflammation, from which result pains of the nature of rheumatism. Some of the better French authors treat of an “engorgement sereux” of this nerve, from which come not merely defect of motion, but an atrophy or wasting of the hip and limb; which proves, says *Portal*, that the nerves are the source of nourishment as well as of action. However, you will not subscribe to this conclusion, but only believe that a part being left inactive, degenerates.

Let me, however, remind you how many different sources of pain there may be, before we fix on actual disease of the ischiatic nerve as the cause of symptoms. 1. Inflammation in the joint; 2. Rheumatism of the hip; 3. Disorder of the kidney; 4. Accumulation in the colon; and, 5. Disease within the pelvis.*

Disease within the pelvis will give rise to pain in

* The remedies are; internally—calomel, opium, antimony, turpentine; externally—warm-bath, stimulating embrocations, and plasters, blisters, moxa, &c. See *Tic Douloureux*, App. to Nervous System.

the course of the distribution of the ischiatic nerve. Thus cancer of the uterus, involving the sacral nerves—so also disease of the rectum—will be attended with spasm in the calf of the leg, and pain in the sole of the foot. So will the presence of the child's head in labour, when it rests in the hollow of the disease cause spasms in the limb.

Nerves, especially cutaneous nerves, are liable to have formed upon them extremely sensitive tumours. I have found them on the cutaneous nerve of the forearm. Portal uses the word "*durillons*." Camper speaks of them, and says, "*Pisi magnitudinem non excedunt*." You know them from their exquisite sensibility, and the sensation that runs down the nerve when they are pressed. I have known them dissipate by being entirely covered up; but in general they require to be cut out. I have known fungous disease in the larger nerves, and death from the extreme pain and burning in the extremity.

It is necessary, in the investigation of nervous diseases by dissections, to notice, that the cord of a nerve becomes soft and transparent from two opposite causes—1. Inflammation; 2. want of use. In a paralytic limb, the nerves are shrunk, and have lost their opaque white colour. So when the sight of the eye has been for some time lost, the optic nerve is seen wasted and transparent.

Two circumstances, if joined in your estimate of symptoms, will be of the utmost consequence in the investigation of obscure nervous diseases—the knowledge of the course and distribution of a nerve—and the effect of pressure or disease occurring in any part of its trunk. Thus we have seen the advantage to

be obtained in this way, in judging of the course of balls, and so we may in conjecturing on the seat of sacrum.

But there is a branch of this inquiry less understood, which is the pain in a remote or external part, when the irritation which produces it is internal or visceral. I do not profess to give a satisfactory explanation of this occurrence, and yet it is so important to the practitioner to hold the fact in his memory during the investigation of disease, that I shall state an hypothesis, allowing the explanation to rest on a principle not yet proved. If a nerve divides, and one branch goes internal and the other to a superficial and sensible part, the irritation on the internal branch will give disturbed sensation to that external part where the extreme branch terminates: Or again, a filament of a nerve not sensible, in the common acceptation, being included in the sheath with a sensitive cutaneous nerve, the morbid sensation will be in the extremity of that cutaneous nerve. The most familiar example is disease in the liver, attended with pain in the shoulder. But you may take it as a general law: disease in the throat—in the heart—in the stomach and duodenum—in the colon—kidney—uterus—have their symptoms in pain referable to the parts external, as the back of the neck, the mamma (See disease of Mamma), the elbow, the scapulæ, the back and loins, and the perineum.

If we cannot satisfactorily account for these symptoms, yet they correspond with the anatomy. But there are others in which the knowledge of the distribution of the nerves give us no assistance; I mean

those neuralgic pains where there is neither disease in the part, nor in the root or course of the nerve. We meet with distressing cases of pain in a single toe—in a single finger—in the course of cutaneous nerves, and, lastly, in the face or eye.

On the affections of the fifth nerve of the face, I cannot do my reader justice without referring him to my volume on the Nerves. He will find there reason to believe that the fifth is the most exquisite in sensibility, and the most varied in function of all the regular and systematic nerves, and most frequently the seat both of neuralgic pain or *tic*, and of actual disease. I cannot now write with half the interest on this subject which I once did, and therefore I shall transcribe the following account of the disease of the fifth nerve.

“ Of Painful Affections of the Face from Disease of the Fifth Nerve.

“ The painful affection of the face called *tic douloureux* is seated in the fifth pair, and for the most part in the second division of this trigeminus nerve; and so convinced am I that it is the more direct connexion established betwixt the sympathetic nerve and the fifth that produces this pain, that I could wish to divide the sympathetic in the neck, if I thought it could be done with safety, which it cannot.

“ The pain of this disease is inexpressibly severe. In the note of the case from which I now quote, the paroxysm begins with much sneezing, and itching of the side of the forehead: the pain begins at six o'clock, and continues for twelve hours, when it is at its height; then the patient cannot speak, owing to the severity of pain; she lies on her right side, and keeps the fingers pressing the temple. As to the kind of pain, I get nothing but this expression:—‘ It is an overbearing pain.’ It does not throb; there is no burning sensation, but a shooting and darting; it goes off at once; her head begins to itch, and as soon as the pain is gone she is quite well again.

"The seat of the pain is in the right temple and the side of the right eye; sometimes it begins in the right side, and then shifts to the left side, quite as painfully. In the case from which I take this note, the patient says the attack is preceded by a weakness in the stomach, 'as if something were alive,' and it goes off with the same sensation.

"In another case the pain came more suddenly, and struck with more violence in frequent shocks, like those of electricity, and in this patient, too, there was an attempt to stop the suffering by pressure on the nerve. By his experience he had discovered the anatomy of the fifth pair of nerves; for, on the sudden recurrence of the pain, I have seen him apply his hands to his face, and press a finger firmly on all the points where the branches of the nerve make their exit from the bones of the face; pressing one finger on the infra-orbitary hole, another upon the inner canthus of the eye, a third upon the frontal nerve, and a fourth before the ear; and he would stand so, fixed in posture and trembling with exertion.

"I have an instance before me of the lingual division of the fifth being similarly affected. 'In this lady the pain in the tongue is sometimes in the papillæ, near the root, sometimes in the tip, but always in the same side of the tongue. There is no difficulty of speaking, unless from the pain, and yet it is not a soreness, but a burning and smarting—sometimes the whole mouth is affected, even down to the throat, burning like fire.'

"*There is a division of this class of diseases which must be distinguished*—painful affections of the face, which do not come from irritation through the sympathetic system of nerves, but from direct injury to some branches of the fifth pair itself; but where the pain is referred to a different portion of the nerve, and generally to the cutaneous or more superficial branch. We have an instance of this in the severe pains which attend the shooting up of the dens sapientiæ in a narrow jaw; in the distress which attends disease of the antrum and caries of the bones of the face, through which the branches of the fifth pass to the face.

"*Note.*—Mrs S. For fourteen years she has experienced pain in the *eminentiæ frontales* (she places the points of her fingers

there); of late the pain has been more in the root of her nose; when seized with a paroxysm, the tears flow from her right eye in a stream; when she touches the right nostril a pain strikes to her forehead; sneezing, and still more coughing, gives her great pain; laughing and crying have the same effect; bringing the teeth together brings on the pain; washing the right cheek with a soft sponge brings on the pain; any change in the temperature of the atmosphere affects her; when she goes into the open air, or when, after having been out a little, she comes into the house, a sharp pain darts up to the forehead. On examining this patient's mouth, the teeth were observed to be black, and the gums unhealthy and ulcerated: on removing two of the anterior molares of the upper jaw, matter flowed from the antrum. On her next visit, I still found the fangs of another tooth remaining buried in the gums, and the adjoining teeth black and the gums spongy. These I ordered to be removed also. After this she could press the side of the face without exciting pain, or bringing on the paroxysm, as heretofore. On her next visit, the gums appeared healthy, the pains were much relieved but still periodical: the solution of plumbi acetis and opium externally applied continued to give her immediate relief.

“Such are not the symptoms of the true *tic douloureux*, but of that case where the internal branches of the fifth pair, being irritated by disease, produce pain in their external branches.

“We have another set of symptoms, and from a more formidable cause, in the following note, which I take also from my private case-book.

“Mrs F.—The burning sensation commenced on the left side of her tongue, and has gradually increased for twelve months, until it now extends over half the tongue, and mouth, and face, and head. It is a sensation as if her mouth were burnt; she had lost the sense of taste in the affected side of the tongue; she is not aware when a portion of meat is lodged betwixt her tongue and cheek. There is a numbness of the corresponding side of the face, which she says is like the pricking of a thousand needles, as when the hand or foot goes to sleep by pressure on the nerves. The end of a feather passed three inches into her left nostril gives her no sensation, and does not produce sneez-

ing; yet she has the smell of both nostrils. On making her describe the extent of 'deadness' with her finger, she runs it round the left side of the chin, and on the side and ridge of the nose. She imagines that there is a dryness of one side of her mouth, but it is not really so; there is no difference in the sides of her mouth to appearance. The pain is aggravated by speaking or by eating; and still more by coughing or sneezing. When she moves and twists her face, she says there is much stiffness to her feeling; but the action to all appearance is quite entire. She says that 'the side of her face is, in a manner, dead; and yet it cannot be dead from the constant pricking upon it.'

"The affected side of her face is subject to become swollen, red, and livid, and extremely hot; so that to allow her to sleep, she must then keep the lotion applied. She says she thinks she must die but for this lotion (solution of opium and plumbi acetate). It is remarked, that to relieve a painful itching at the back part of her ear and on the temple, she pinches the skin, but does not scratch it, for then great suffering is the consequence, and the pain extends all over the side of the face.

"Such symptoms I conceive to come from direct disease of the fifth nerve, or from inflammation involving it.

"Continuation of the preceding case by Dr Whiting.

"Mrs F. called on me, August 2. 1827, for advice for a disease of which she gave me the following history:—

"Twelve months previously she first felt an unusual sensation on the left side of the tip of her tongue as if it were burnt; this feeling soon extended over the left half of the organ, and afterwards over the left side of the palate, gums, and face; it was accompanied by an almost total loss of the sense of touch in the parts affected. The uneasiness had been constant from its commencement, increased, however, by the motions of the face, and by the contact of the hand on any solid body.

"At the period when I first saw her, the boundaries of the disease were, the ridge of the nose, the raphe of the upper and lower lip, the lines which mark the division of the right and left sides of the palate and tongue, the margin of the left lower eye-lid, the anterior edge of the meatus auditorius externus, and the horizontal ramus of the lower jaw. In none of the other parts of the face was there any evidence of disease. The morbid condition of the parts affected was as has been de-

scribed; both taste and feeling were lost from the left side of the tongue, so that she was obliged to chew on the right side only, and if the food lodged at any time between the teeth and cheek in the left side of the mouth, she was obliged to remove it with the finger. The motions, however, of every part of the face were properly performed, the features not at all distorted, the tongue protruded in a straight line, the temporal and masseter muscles appeared to act powerfully on both sides; she had no difficulty in utterance, except occasionally, when much excited; her general health seemed good, her appetite was strong, her bowels were confined, and her tongue rather white. Since the age of twenty-one a violent headach had frequently distressed her, which she described as going off by the face; it was accompanied with sickness and vomiting of bile: this headach had continued to return at intervals since the commencement of her present ailment.

“ On 8th October 1827, I find I reported that the symptoms had gradually increased in severity, and the disease extended somewhat beyond its former boundaries.

“ September 1828.—From the last date to this she had been nearly lost sight of by me; she had been for some time under the care of Mr Charles Bell. On visiting her at this time, I found that she still had a distressing sensation on the left side of her face, &c., although altered in its character; her speech had become indistinct, her face was drawn to the right side, the masseter and temporal muscles of the left side had ceased to act, the tongue was protruded towards the left side, the hearing of the left ear had ceased; she could raise the left upper eye-lid by voluntary power, but could not keep it elevated; the effort to raise the globe of the eye was attended with headach and giddiness; there was considerable secretion of tears; she was emaciated and bed-ridden, and complained of great and constant pain at the back part of her head.

“ About a month before her death her intellects became confused, her breathing difficult, her speech quite indistinct, and her deglutition impeded; she occasionally ground her teeth with violence, and her jaws were often firmly clenched, apparently by the contraction of the muscles of the right side; she seemed to die at length (in February 1829) from difficult respiration, and want of the power of swallowing.

“ *Post-mortem appearances.*—The frontal bone was more than

one-third of an inch thick, and studded with numerous granulous eminences, causing corresponding indentations on the surface of the brain; the vascularity of the dura mater was increased, but not more adherent than usual to the bone; the substance of the cerebrum and cerebellum had more blood than it is generally found to contain after death, but was otherwise of a healthy appearance; about one ounce and a-half or two ounces of serous fluid was found in the ventricles; a tumour containing fluid of the colour of urine (considerably darker than that taken from the ventricles), about the size, and not unlike the form, of a pigeon's egg, was discovered on dividing the tentorium on the left side, bounded by the petrous portion of the temporal bone, the pons varolii, and the left lobe of the cerebellum; the part next to the pons had contracted a slight adhesion to it, and had, by its pressure, produced considerable indentation on the left side of it; the tumour seemed, on minute examination, to be a growth from the inferior surface of the crus cerebelli, just behind the junction of the pons varolii; this morbid growth consisted of a bag, partly membranous, and partly medullary, the interior of which was cellular, and containing a fluid, which has already been described in a manner, not very unlike the vitreous humour of the eye, excepting the colour of the fluid. The first and second pair of nerves on the left side were as usual; the third was slightly displaced by the tumour; the fourth undisturbed; the fifth appeared to come from the fundus of the tumour, passed under the dura mater at its usual place; it was flattened and thin as if from pressure, and could be traced along the coat of the tumour no further than within about half an inch of its origin. The sixth pair was healthy; but the seventh, both portio dura and mollis, was completely involved and lost in the tumour from a quarter of an inch from its origin to the meatus internus; and into this foramen no nervous structure could be seen to enter, but a substance resembling the membranous portion of the tumour and apparently a process of it; both portions of this nerve, however, were distinct from each other at their origin, and of their usual appearance.

JOHN WHITING, M. D.

“ 250 High Street, Southwark, March 1829.”

“ From whatever cause it may proceed, whether from the more exquisite sensibility of the fifth nerve, or its more remark-

able connexions, certainly all nervous affections are peculiarly apt to fall with a concentrated force upon it. Thus, in injuries of other nerves, the first symptom, before the affection spreads to the other voluntary muscles, is stiffness of the jaws. In several instances of injury of the nerve in amputation, also when the nerves have become entangled in the cicatrix of the stump, the pain has struck into the face and jaws, producing a tic.

“ Returning to the subject of tic douloureux, I prefer transcribing the note of a clinical lecture.

Clinical Lecture on Tic Douloureux, delivered at the Middlesex Hospital.

“ Before leaving this hospital, I mean to give you some clinical remarks; a practice which I have pursued for one-and-twenty years: it was my earliest duty, and it shall be my last, to the pupils of this hospital.

“ There is an indescribable pleasure in reflecting on the successful treatment of diseases attended with pain amounting to agony. On Thursday last re-appeared a patient (Charles Delafield), in whom some of you were much interested during the early part of last summer. He presented himself a miserable object; his head surrounded with a night-cap and rolls of flannel, which almost hid a face, pale, and wasted with incessant pain. Seeing him so proper an object for the charity, I gave him a letter, and wished him to come into the house. He expressed himself grateful, but he dared not; for he could not bear the restraint even of lying in bed, and had no relief from pain but in continual work in his business, which was that of a carpenter. His complaint was *tic douloureux*, and of that most severe kind which fixes in the centre of the cheek: it came like a flash of lightning upon him. I exhausted my little store of remedies, and still he returned, not weekly, but daily, a miserable object—a study for the painter, if he desired to design “ the last man,”—a man despairing.

“ After some weeks of attendance, one morning (whilst I was surrounded by the out-patients) this man, not waiting his turn, burst through the crowd, calling out he was cured! This, no doubt, he did from his confidence in the interest young and old

had taken in his sufferings. I knew not what I had given him, but looking at his card, I found the following :—

R. Ol. Tiglii (Croton) gtt. j ; Mas. Pil. Colocynth. Co. ʒj.
Misc. et fiant. pil. xii. Mitte pil. Galban. Comp. xii.
One of the purgative pills and two of the gum pills to be taken on going to bed.

“ The pills operated quickly, and rather violently, upon him ; but he continued them, the pain leaving him, and a remarkable change taking place for the better in his countenance, no doubt from his obtaining sleep as well as freedom from pain.

“ Before I go further, I shall recall your attention to the pathology of this complaint, and venture to repeat what I formerly stated to you. It has appeared to me surprising that authors have omitted to found on the anatomy of the nerves, which leads us directly to the satisfactory explanation of the symptoms in this disease. The sympathetic nerve we have seen to be a whole system of nerves, spreading every where, possessed neither of sensibility nor power over the voluntary muscles ; it is nevertheless acknowledged to have important offices in controlling and combining the whole economy of the system, and to have its centre in the abdominal viscera. The very circumstance of its affording no phenomena like other nerves, should lead us to conjecture that, as this system resembles in structure the nerves of sensibility and motion, it must have powerful, though secret, influences.

“ I was careful to point out to you, that the connections of this system, or (if you will) of this nerve, are universal ; but that the habit or mode of demonstrating it leads us to pay more attention to the branches which extend into the head, though neither larger, nor probably more important, than those which extend into the plexus of the axilla, or into the sacro-ischiatic nerve.

“ Are we to admit or to deny this influence of deranged bowels—of visceral irritation—in producing external pains, local paralysis, or partial spasms ? No man who attends to disease can deny the existence of this influence. Taking this as admitted, the line of connection is clearly laid down in the anatomy.

“ Nor can we deny, I think, the effect of the confluence and mixing of internal nerves with such as go to parts external and exquisitely sensible ; and that, through this connection, exter-

nal pains become significant of internal disease, or more commonly of irritation and disordered function.

“One step further in this inquiry. The fifth nerve is the most exquisitely sensitive of all the nerves of the frame: the sensibilities it bestows are enjoyed in a higher degree than those produced through any other nerve of the system. It is also the seat of most severe pain.

“Impressed with these facts, the moment that we see the map of the relations of the sympathetic nerve with the second division of the fifth, by a large and direct branch, and lesser connections of the same nerve with all the branches of the fifth, we surely need look no farther in explanation of the frequent and intimate dependence of a painful affection of the face upon the state of the digestive organs.

“It is rather remarkable that Mr Abernethy, who did so much to direct the attention of the profession to the influence of the stomach and bowels on local affections, should have abandoned his ground on the occasion of the triumph of the principle. I allude to that passage of his work where he writes, ‘I shall only say, that to me *tic douloureux* appears, in general, to be as much a constitutional affection as gout or rheumatism; and that constitutional treatment is that which seems most likely to be of advantage in this as well as in nervous affections generally.

“Most certainly the mere exhibition of blue pill and the bitter draught (though they will alleviate) will not cure the painful affection of the great nerve of the face. But consider the length of the intestinal canal; above all, consider how strangely distinct portions of that canal are affected by different medicines. Does not this imply a distinction in portions of the tube, which may, in their disturbed condition, affect remote parts, and with various effects? This, I confess, has long been my opinion; and that, although the common means of relieving a headach, or a megrim or clavus, may fail in this, yet that we ought not to despair of finding a purgative which, peculiar in properties and effects, may reach the seat of this irritation, and may consequently influence the *tic douloureux*; and what more likely than the croton, in proper combination? I was acting under this conviction when I prescribed the croton oil.

“But let us return to the result of experience. Since the period when Delafield appeared suddenly among us, like him

who drew Priam's curtain, I have had four cases of pure *tic*, cured by the same means."

Since writing the above, every true case of *tic* which has presented to me has been cured.

And now with regard to the operation for *tic* in the fifth nerve, I hope we may hear no more of dividing nerves to cure neuralgic pains. It was at no time a rational proceeding, and these cases prove clearly that the seat of the irritation is in the nerves of the viscera.

Yet surgeons, like all men after a certain age, are slow to yield to a new practice, nor will you be certain of propitiating them by proving that they have been wrong; so, some will not only cut the fifth pair, but with a manly determination they will cut the seventh, although distortion of the face, and even blindness, should be the consequence!

Sir Henry Halford has stated that the *tic douloureux* in the face arises from the irritation of nerves occasioned by the carious bone through which they pass; and Sir Benjamin Brodie backs him in saying he has seen cases which support his opinion. This is confounding two conditions of the nerve totally distinct,—the nerve irritated by disease in its course, with the remote and circuitous influence which produces the true neuralgic pain. I have stated that the first is always attended with more or less permanent insensibility in the extremity of the nerve, the consequence of the actual disease of the trunk; the other is attended with intervals not only of ease, but of a perfect condition as to sense and motion. In the former you do no good by remedies directed to the intestinal canal. It is in the latter that they are all-powerful.

Although I restrict myself to the surgical treatment of the nerves, or to such views as may prevent improper surgical interference; yet I must state an opinion on a subject of some importance in the medical treatment of these diseases. Whenever a pain returns periodically, the practitioner has recourse to bark and arsenic. Now there are

two sources of periodical returns of disease of very different natures. The one is the external influence called atmospheric, the same which produces intermittents; the other is occasioned by a change altogether internal; the condition of the digestive and assimilating processes.—Irritation from the matters passing through the canal in a certain stage of their progress, will be attended with remote pains; and these consequently have a period of return.

CHAPTER VII.

OF WOUNDS OF THE GREAT CAVITIES, THE ABDOMEN
AND THORAX.

§ I. WOUNDS OF THE ABDOMEN.

The importance of the subject authorises us in making a distinct chapter of the wounds of the great cavities. You look to the first principles, under the general title of *Wounds*, vol. i. page 43, and of *Hæmorrhage*, vol. i. p. 50. But there is much in the present section which deserves a distinct consideration.

After a battle, the number of men found struck in the belly is in the proportion of its area to the rest of the body. But a few days thereafter you will find there are none, or at least very few, so wounded. The conclusion is too obvious; wounds of the abdomen are the most fatal of all!

Contusions on the belly are often fatal, and sometimes suddenly so. A blow on the stomach, like the *coup de grace*, will destroy life on the instant.

A bruiser stands up to his antagonist, firmly braced, the muscles of the abdomen in action, and the viscera supported; he will stand severe blows: but when a drunken idiot is found fighting, he may be killed by a single blow. So a man falling from a height, his stomach striking against a projecting part (a lamp-iron, for example), is found dead without apparent injury.

This is a nervous influence, but there is another source of injury and death, the bursting of the solid viscera. By a fall or a blow on the side, the liver is sometimes rent across, and the blood poured out into the cavity of the abdomen; the person dies of hæmorrhage. (See Symptoms of Hæmorrhage, vol. i. p. 50.)

When Sir Francis Burdett was a patriot, and had the mob at his heels, a young man was shot by a ball from a dragoon's pistol—shot in the thorax, a rib being broken. I saw he was dying of internal bleeding. The feeble pulse—the marble paleness—the gasping and anxious breathing—the restlessness and jactitation—implied approaching death before inflammatory reaction could account for symptoms. On feeling the abdomen, it was tumid, and obviously contained fluid. This youth died, and on examining the abdomen I found it full of blood. The spleen was burst. In the thorax I found the ball. It had struck the diaphragm without penetrating it, and with such force as to burst the spleen.

We have understood the nature of a *penetrating wound*,—here, it is where the weapon has penetrated the peritoneum, and broken up the continuity of that membrane. When inflammation takes place on such a surface, it spreads by “continuous sympathy;” and the extent of the inflammation, as well as the importance of the viscera which it involves, are the sources of danger: then, there is tension of the belly, tenderness on pressure, pain, restlessness, vomiting, and the pulse small and rapid.

Mark, then, the difference of the suffering from inflammation, as distinguished from spasmodic pain. In the first, the patient lies supine and motionless, for rising and turning, cause the abdominal muscles to press the inflamed parts, and the pain is consequently aggravated by vomiting—his breathing, too, is high—he substitutes the action of

the thorax for the abdominal muscles. In the latter, he twists and turns, and presses his belly, to relieve the pain.

It surprises and gratifies the practitioner when, contrary to his fears, no symptom arises; this is owing to the adhesion of the surfaces. The term cavity, as every student knows, is incorrect; every thing in the abdomen is pressed into close contact, and when coagulable lymph is thrown out, the surfaces adhere, and thus "the adhesion terminates the inflammation," it spreads no further.

When the person survives a wound of the belly, we may surmise that the intestines have escaped; for, in fact, by their yielding, they do marvellously escape; or, again, the adhesive inflammation has glued together the adjoining surfaces, and the inflammation is prevented from spreading.

Escape of Viscera.—When the wound is large, the general pressure and action of the abdominal muscles cause some parts to protrude, and most commonly it is the omentum and a turn of the intestine. This is a formidable occurrence. The *omentum* is unlike what the operating surgeon is familiar with in cases of hernia; there is no condensation or agglutination of the mass. It is delicate, and unless great care be taken, it is torn, and bleeds among the fingers in the attempt to reduce it. The intestine, too, must be handled with great care (and with all the precautions noticed in vol. ii. page 37).

It is ingeniously said by Heister, that when a portion of the intestine has escaped, and is strongly distended with flatus, that a little more should be drawn out, which will render the distention less, and the

reduction more easy. I do not exactly perceive this consequence; since you must draw out the mesentery, thereby increasing the volume of the parts. Let it be only understood that the flatus is to be pressed inwards before the reduction of the intestine is attempted. *Paræus* and others recommend the puncturing the intestine with a needle to permit the flatus to escape. This is not to be imitated; on the contrary, the wound in the abdominal walls is rather to be enlarged. The advice shews how much, in their opinion, the flatulent distention hinders the reduction.

In reducing the parts, have a distinct recollection of the layers of which the walls or parietes of the abdomen consist. You may get the intestine within the integuments, and not within the tendinous sheath of the external oblique; or it may be within the muscles, and not within the peritoneum. Then an obscure fulness, though no distinct tumour presents, and symptoms of strangulation come on. Take care, then, that the parts are actually reduced, and within the peritoneal covering.

When the belly is opened largely, the quilled suture is recommended. The reason of this is, that the action of coughing, sneezing, vomiting, causes such an impulse, that the common ligatures cut the skin. The quilled suture has a firmer hold.

For this purpose, use a common curved needle, with a ligature of four waxed threads; pass the needle through the integuments and muscles; cut off the needle. Do the same at the distance of three-fourths of an inch; again a third, and perhaps a fourth. Divide each ligature where it hangs out, into two; lay a bougie parallel to the lips of the wound, and between the ends of the ligature; tie these ends over the bougie. Do the same by placing a bougie between the ligature on the other side—tie—draw the ligatures. The effect is to draw the lips of the wound to-

gether ; the bougie bearing on the skin, instead of the sharp cutting ligature. Adhesive straps may be used in addition, to adjust the edge of the wound ; or the ligatures which tie down the bougies may be crossed over and tied.

When the intestine is punctured as well as exposed, there is an eversion of the mucous membrane of the intestine through the wound of the peritoneal coat. This in some degree closes the opening, and prevents the evacuation of the contents of the gut ; but it also prevents adhesions, for the mucous membrane is not prone to adhesions.

In the event of the intestine being punctured or slightly wounded, you should transfix the lips with the tenaculum or needle, and throw a fine thread over, so as to draw together the edges of the wounded peritoneal coat ; withdraw the needle or tenaculum, and cutting the ligature short, reduce the intestine. It is probable that such a " suture " may give way under the action of the intestine ; but if before this occurrence the adhesion of the surrounding parts has taken place, the contents of the gut may be confined.

We must confess, however, that the old advice, that of Heister, for example, was, that small wounds of the intestines should be left to nature. Wounds *calami circiter amplitudinem vix superantia sui neutiquam debent sed naturæ bonitati committi.*

When the intestine is wounded largely, the contents are evacuated, and death from peritoneal inflammation is the consequence. If the wound has been inflicted in an empty state of the bowels, it is more favourable ; since time is given for the omentum and neighbouring viscera to inflame and adhere, so as to form a pouch round the wounded intestine, and so to confine the acrid contents of the intestine. Something will depend on the direction of the wound relative to the gut.

Mr Travers' experiments shew that the longitudinal wound of the intestine is attended with less eversion of the mucous membrane, and better hopes of cure.

But the intestine may be pierced, and yet not exposed, and in many cases recovery has taken place; for, as explained by Mr J. Bell, there is a uniform and universal pressure on the bowels, and if no large quantity of the contents be discharged, the surrounding parts adhere, and their contact supplies the defect of continuity in the coats.

Old authors, such as Heister and Dionis, as well as modern authors, as Mr Travers, are decidedly adverse to the simple process recommended by Mr John Bell, when the intestine is hanging out and divided. They are, I imagine, right in this matter.*

See an Inquiry into the Process of Nature in repairing Injuries of the Intestines by B. Travers. Read also Sir A. Cooper on Hernia, part 1.

"The Glover's suture," that is, the continuous sewing over and over, appears to be preferred; which indeed is the recommendation of Heister; the ligature, instead of being left hanging out, may be cut close off. I pretend to no practical knowledge of this sewing of the gut.

Mr Travers found, in his experiments, that the ligatures used to unite the wound of the intestines, were carried into the intestines. I had very long before had experience of this; for, on endeavouring to noose a portion of the intestines to see how long it might be deprived of circulation, and recover, I found that the dogs and cats survived such opera-

* My ingenious brother was severe in those days upon his name-sake. Yet the practical rule, as deduced from the Experiments of Mr Travers, and the practice of Sir Astley Cooper, comes much nearer the advice of Mr Benjamin Bell than of his critic.

tions as would have proved fatal in the human body ; that the ligatures were first covered with a layer of coagulable lymph, and in process of time, by ulceration, were received into the cavity of the intestine !

But do not let this familiar talk about sewing the gut blind you to the consequences. Unless an immediate and happy adhesion stops the inflammation, vomiting will follow ; and it is a serious matter, if not a fatal sign ; for if you cannot allay it, then comes tension of the belly, and painful and difficult respirations and death.

You have little in your power but to bleed ; the juvantia of purging and the use of antimonials cannot be had here. The evacuation must only be by clyster, and an effervescing draught with laudanum, is all that can be given by the mouth, and a spoonful of milk with lime-water, must be all the sustenance.

The successful cases are principally those of wounds of the colon. Not unfrequently the colon is wounded in the iliac regions, without the peritoneum being pierced.

Anus contre-nature,—I use the French term, because employed by the earliest and best authors.* “Artificial anus” is hardly the proper term, inasmuch as more is owing to happy chance than the artifice of the surgeon. “Anus at the groin,” see Hernia.

This preternatural anus may be formed in diffe-

* *M. Louis* in the third volume, and *M. Sabatier* in the fifth volume, of the *Acad. de Chirurgie*.

rent ways. It has presented to me most frequently, in consequence of inflammation in the colon; which produces, first, adhesion,—then suppuration,—then the abscess opens outwardly,—then the fæces are discharged.

There are sometimes oblique intricate sinuses, and occasional abscesses, which produce distress and fever.

Similar consequences result from wounds, and sometimes the everted mucous coat of the intestines presents; and when the evacuations come, they are attended with an inversion and prolapsus of the gut.

The last case in which I was consulted was a fistulous opening connected with the colon on the right iliac region. Sir Astley Cooper had preceded me, and advised that the intestines should be locked up for a time with opiates, to give rest to the parts and to the action of the intestine, I must presume, and in the hopes of time being given for adhesion or consolidation. This treatment had not succeeded. My advice was the regular use of small and largely diluted doses of neutral salts, in order to leave no irritating deposit of feculent matter in the colon, and to procure a freer discharge outwardly. I am happy to learn since, that the practice has been successful, under the care of Dr Scott of Mortlake.

Congestion in the cells of the colon round the nucleus of a bone, produces inflammation and adhesion to the integuments, and an abscess which appears to be superficial, until the undigested matter appears at the ulcer, and declares the nature of the case.

Sabatier, treating of the anus contre-nature, loc. cit. p. 595, says, the matter discharged is not so offensive from not being so long retained, as when it descends through the natural passage. This is hardly the correct view. You know that the stomach, the “intestinum tenue,” and the colon, have distinct functions; and “fæcification” * is per-

* A word of Abernethy's coining.

formed in the great intestines; yet it is better when the communication is formed with the great intestines, for although the discharge is more offensive, it is at more regular periods. Besides, the function of nutrition is accomplished, whereas, when the fistula is higher, there is not only more danger and more distress, from the superior part of the canal being more vital, but the absorption of chyle is diminished, and consequently the nutrition. And here the discharge of intestinal fluid and flatus is almost continual, and the attempt to restrain it attended with great distress.

Looking to these consequences, they lead to an anxious question. Notwithstanding all that has been said about sewing a portion of prolapsed gut,—is there no surer way of avoiding the imminent danger and the very distressing consequences? I think it would promise better to leave the extremities of a divided intestine which had prolapsed, projecting a little from the wound,—adhesion would readily take place between the intestine and peritoneum,—the discharge of intestinal matter would be free,—the danger of its getting into the abdominal cavity altogether removed, and the relief to the distended bowels absolute. As the patient's life is safe when adhesion has taken place, there would remain the operation of establishing the continuity of the canal, which is the operation described under Hernia, page 44.

If this operation be contemplated, it should be provided for by retaining the portions of the intestine together. (In the class drawing of the case of Peltier, there is half a foot between the orifices, which of course can never be brought together.)

When *the stomach is wounded*, there is faintness and vomiting, and probably vomiting of blood. It

is a fatal wound :—when we announce this, we must admit exceptions,—yet they are but exceptions.

Wounds of the solid viscera—wounds of the mesentery—are attended with hæmorrhage, and are too often fatal. Bleeding unresistingly into the abdomen, the person bleeds to death, or the collected blood resolving in the cavity, occasions peritoneal inflammation.

The gall-bladder being wounded, pours out its acrid contents; the bladder of urine being wounded from the abdomen, pours out the urine into the cavity, and fatal inflammation results. Yet have I seen a ball enter under the navel, and lodge in the bladder, and the patient survive. I have had a case where the ball penetrated the bone of the pelvis, and lodged in the bladder.

The principles formerly laid down, will satisfy us how it happens that a musket-ball shall enter the abdomen, and lodge in the colon or bladder. It enters the walls of the distended bladder, because the full bladder resists; but in passing out of the cavity the coats yield, and the ball is thrown back; and thus we explain the not unfrequent occurrence of balls passed by stool after wounds of the abdomen, they having been stopped in the colon.

In the case of gunshot wound of the bladder, you would no doubt keep the catheter in the bladder to prevent the accumulation of urine in it, and the hazard of its escape during the process of sloughing which must ensue. As the operation, as for stone, must eventually be performed, ought it not to be performed the moment that leisure permits? The opening in the lower part of the bladder would allow the urine to flow in that way, and prevent it escaping into the abdomen.

However, the case is not easily ascertained, the symptoms of stone being the first indication of the ball lodging there.

It is possible that the ball lodges in a sac communicating with the bladder and not in its cavity. I have found it so.

Paracentesis Abdominis.

An operation by the surgeon's hand being still a wound, we may conclude this section with the operation of *paracentesis abdominis*, or tapping. The operation is performed for *ascites* and for *ovarian dropsy*.

When the physician puts this patient with abdominal dropsy into your hands for the operation, you will judge for yourself of its propriety. Have you heard of such an operation as "dry tapping?" It is indeed a serious mistake—for I repeat it is still a "penetrating wound."

There are present the symptoms of dropsy—thirst, paucity of urine, breathlessness,—there is oedema of the ankles, anasarca of the scrotum, oedema of the cellular membrane of the abdomen. The case is urgent when there is oppression of the chest. In the first place, let it be the endeavour of the practitioner to obtain, by medicine, an increase of urine, for it is when in this state, that relieving the abdomen from pressure has the most beneficial effect.

You examine the patient in different postures : you tap and feel the undulation : you distinguish the tympanitic sound of the flatus in the colon from the fluid in the cavity.

The Operation.—You are about to let off a large collection of fluid from the abdomen. Now, although the abdominal muscles and diaphragm adapt themselves to the change of condition of the viscera, yet there is a want of support, and consequently a filling of the abdominal veins, and a faintness consequent on the discharge of fluid. Provide against this by swathing the belly with flannel, and let the assistants hold the ends of the web, and draw tight in proportion as the fluid runs, or when the patient feels low and faint.

In our London Hospitals, this is carelessly done by surrounding the belly with a jack towel. But the proper bandage should be used, that it may be finally pinned down after the operation without the necessity of removing the support.

Take the point most prominent, which will be that intermediate between the umbilicus and pubis. Touch the skin with the point of the lancet, so that you may not be resisted by the tough skin in introducing the trochar. Your assistant having oiled the trochar (consisting of the stilette with its canula), hands it to you. You calculate the thickness of the walls of the abdomen; the depth to which the point should penetrate: you fix your fore-finger on the instrument, at the point which is to interrupt its further progress. Placing the point in the cut already made, you enter it with a rapid motion, more fitted to penetrate the peritoneum than to push it before the instrument. When it has entered the cavity, you push forward the canula, and, if all be right, it moves easily off the stilette.

It is very proper to stop the flow of serum from a greatly distended belly, and to give time for the accommodation or adjustment of the muscles to the sudden vacuity.

If the stream stops of itself, perhaps the omentum or the intestine has fallen against the end of the canula; you then pass the second or inner canula.

There will be no bleeding if the puncture be made in the centre of the belly.

If paracentesis should be done in the old place, midway between the umbilicus and the anterior process of the ilium, there may be blood. Should this occur, the evacuation of fluid should be stopped, and the belly firmly swathed. For a time the canula should be pressed down so as to compress the bleeding vessel. Instead of more desperate measures, did the misfortune occur in my hands, I would pass a small

round piece of sponge, firmly tied to a ligature, through the canula ; press it out with the probe, so as to make it expand beyond the mouth of the canula, and drawing it back, the mouth of the vessel would be stopped.

But as this might occasion peritoneal inflammation, I would advise you to avoid the possibility by tapping in the linea alba, as practised by Mr Cline, after he had witnessed the loss of blood by tapping in the side.

The disadvantage of puncturing in the linea alba is, that the wound does not readily close ; and the water dripping away, peritoneal inflammation comes on to close the scene. I have avoided this by a little change in the mode of operating : when you have made the puncture through the integuments, before using the trochar, draw the skin aside. By this means, when the operation is finished, and the instrument withdrawn, the wound is oblique, and it closes without the fluid draining away.

Somebody has advised to keep the trochar in, and occasionally to draw off the water as from a cistern. I drew off the water of ascites six successive times from a poor student in London. Both relations and doctors got tired of this unprofitable work, and proposed that the *tap* should remain ! “ Why,” said I, “ the lad will die ; peritoneal inflammation will certainly ensue, and the first stage of it will be his death.” They persisted. “ Well ! there is the canula in, manage it how you will.” In three days the patient sunk. You at once perceive how much at variance such a practice is with all that I have delivered at lecture. But so it is at the present time ; there is no head to the profession to guide it in great doctrines ! And schools are numerous over the country, with no acknowledged general principles, nor any sort of bond or affinity.

In the encysted or ovarian dropsy, there is less fear of immediate bad consequences ; the sac has risen and adhered to the peritoneum. It is thick ;

the contained fluid is gelatinous or ropy; and for these reasons you use a larger trochar.

¶ You inquire into the history; you find the woman has been irregular, and the uterine functions disturbed. The swelling you find was at first on one side. It extended to the centre; it is of late a general fulness.

The sac has now come into contact with the whole surface of the peritoneum, as it lines the abdominal muscles. It has pushed back the viscera: it has pressed down the uterus: it presses also on the bladder. You may feel the undulation in the vagina, when the belly is tapped with the finger. You have considered the question of pregnancy.

The operation is the same as for ascites. Sometimes the contents flow freely, and stop suddenly before the tumour is much diminished. Then probably the fluid is in distinct cells. On this occurrence there comes to be a question, whether or not you should reintroduce the stilette, and open another compartment? You must not proceed far in this way, or you will have inflammation. Desist for the present and gain time; the nature of the fluid may change.

I had a colleague that resolved on a radical cure of ovarian dropsy, for which purpose he left a bougie in the sac. Inflammation followed, and the patient died, as might have been anticipated.

§ II. WOUNDS OF THE THORAX.

Study the forms of the thorax, the relations of the cavities. Observe how narrow the cavities are upwards,—how they expand below,—how far the diaphragm rises, and its form, *e. g.* a sword or bayonet may pass twice through the thorax, and also through the abdomen! Observe also how the lungs and stomach may be wounded by the same thrust, and the patient expectorate blood, while he also vomits it!

I had a patient who had the sharp prow of a wherry driven into the chest, yet he lived, the lungs having been pushed aside. It was not, however, so remarkable as that case, which occurred under the observation of Sir William

Blizzard, where the shaft of a gig went quite through the chest, the end striking the wall beyond! The singular thing is, that Sir William obtained the dissection of the body some ten years after, and you perceive no vestige of the wound. The shaft had entered between the ribs of one side, passed behind the sternum, and pushed back the pericardium and heart. The preparation is in the Museum of the College of Surgeons of London.

In a penetrating wound of the thorax, the intercostal artery may be wounded, and pouring out its blood. You have the symptoms of hæmorrhage joined to those of oppression in the chest.

Various instruments have been contrived to compress this artery; they are not forthcoming when wanted, and are only not worse than the proposal of including both rib and artery in a ligature by a plunge of the great needle. The proper mode is to place a fine handkerchief over the wound, and to push it in with your finger, and then to stuff it with charpie. When you have thus made a ball just within the lips of the wound, you draw upon it, so that the distended bag, like a compress, presses on the artery, prevents bleeding into the cavity, and may be made to suppress the hæmorrhage altogether. When it is required, you pick out the loose lint, and the cloth is withdrawn.

Of *wounds of the lungs* we may put aside the fatal cases, and direct our attention to those in which art is available.

There is coldness, faintness, extraordinary thirst, oppression, heaving of the chest, tossing of the arms; the mouth fills with blood, and he faints or is suffocated.

In a lesser degree, and in less desperate circumstances attending sword or bayonet wounds, there is frothy expectoration, probably the escape both of blood and air from the wound. He has difficulty of lying on the opposite side, sits up and breathes with

difficulty, and with a characteristic twist in the act of inspiration.

These being the symptoms, what has actually taken place? Obviously the lungs are touched, and the blood is flowing into the bronchi and into the trachea. (There is then danger that it may be drawn into the division of the opposite side.)

The lungs have in part collapsed,—a happy circumstance, for if distended, they would bleed more. Air has been admitted into the lateral cavity of the chest.

The well educated practitioner does not say that the lungs are wounded, because there is a blast of air from the wound in the side. If the wound be large and not oblique, as the thorax expands, the air is drawn in by the wound; and in expiration, that is, the descent of the ribs, that air is expelled.

Practice.—You use the lancet, and bleed as much as is consistent with life; for you have no other means of suppressing internal hæmorrhage. You introduce your finger into the wound, and give passage to the blood and air, which gives instant relief.

How should any thing so apparently unnatural afford relief? By evacuating the contained fluid, you do nothing to relieve the side wounded, but you give freedom to the lungs of the other side. The air and blood of the wounded side has compressed the lungs, pressed down the diaphragm, and bears more or less against the mediastinum, which embarrasses the motion of the diaphragm, and the play of the ribs of the other side.

And this is also the reason why the patient cannot lie on the opposite side, since the pressure against the ribs interrupts their motion, on which the act of respiration now solely depends.

It is obvious why we must reject the contrivances for pumping out the air from the cavity, whilst there is danger of returning hæmorrhage from the lungs,

or into their cells; and when it is desirable to get the air from the cavity, there is no occasion for instruments to suck it out.

If the patient fully expels the air from the wound by expiration, and you put down your dressing over it, when the breath is drawn, as the air cannot enter by the wound, the expansion of the chest dilates the lungs to a degree; and if, again, the dressings are lifted as he expires, and closed on the wound when he inspires, more and more air will be discharged; the lungs will come in contact with the pleura costalis, and adhere, after which the remaining portion of air will be absorbed.

Wounds of the Diaphragm.

Formidable as this wound is, the wounded man sometimes escapes with life. A pistol-ball raking across the diaphragm will produce most alarming convulsions of the muscles which elevate the shoulders. If the duellist does not fall on receiving a shot across his chest, the shoulders will be alternately raised and depressed with sudden jerks. It does surprise us that a shot so deadly aimed does not prove immediately fatal, seeing the closeness of the parts to the diaphragm, the stomach, and liver, below, and the heart above; but so it has happened, and may again. We are reminded of these chances, that we may not at any time be negligent through despair. In the case of such a wound, the lancet must be used freely; and still as the oppression returns you must have recourse to it again and again,

until it shall become a question whether the patient is to die by the hands of his enemy or his friend—by inflammation and effusion, or the direct debility of over bleeding.

Hernia Pulmonum.

It has puzzled many to see the lungs protruding through a wound between the ribs. They conceive it to be a proof of a power of expansion in the lungs themselves. It is far otherwise. It takes place thus. The wound (probably that by a sword) lets in air to the cavity of the chest, and the lungs consequently collapse. The collapsed lungs, if loose in the cavity, may fall against the wound in the side, whilst yet the cavity contains air. When the ribs descend in expiration, this air finds no exit; and the lungs lying like a valve against the wound, are pushed out. In this we see that the lungs are passive, as they always are.

If this hernia or protrusion of the lungs is to be reduced, it must be by passing a catheter or tube by their side into the cavity, and thus letting the confined air escape, after which the lungs are reducible.

But the portion of lungs thus thrust out may adhere, and even be strangulated.

We must remember that no appearance in the dead body is so common as adhesion of the lungs to the sides of the cavity,—the adhesion of the pleura pulmonalis to the pleura costalis; and that this adhesion, in the case of a wound, will prevent both collapse and protrusion of the lungs.

Gunshot Wounds of the Thorax.

As to wounds of the heart and great vessels, I need not fill my page with narratives—they are fatal wounds. You ought to know certainly that they are not always immediately fatal, that there is sometimes a period of suffering. The man falls—is sensible of a mortal wound—faints—revives—has returning sense ; on attempting exertion, faints again : and thus it may be even in a wound of the aorta itself.

When the aorta bursts from disease, the man faints, and falls like one struck dead ; but he revives, though blanched and livid. He has excruciating pains from the tearing up of the membranes of the chest ; and at each successive stage as they give way, he faints : and thus he may pass one or two days.

If there be a wound of the great vessels—the aorta or vena cava, and the blood escapes freely, the victim never draws breath again, nor utters a groan ; but if the blood escapes less freely, and, being confined, compresses the bleeding vessels, he may struggle for a time.

Thus a wound of the heart, giving its blood out into the pericardium, the blood surrounding the heart suppresses its action, and the weakened action at the centre of the circulation sometimes saves him from immediate death. There is a case recorded of a sentinel aboard a ship falling down a hatchway ; his firelock fell more rapidly, the body fell against the bayonet, which transfixed the heart : the man survived to the third day. We have even gunshot

wounds of the heart recorded, where men have survived many days. But this is idle gossip; these wounds of the heart and great vessels are fatal.

I have myself observed one curious circumstance in regard to gunshot wounds of the heart, that, in one case, a ball will simply pierce it, whilst in another instance a small bullet shot from a pocket pistol will make a wound from the base to the apex. I imagine that this depends on the state of systole or diastole, in which the heart is, at the time the bullet strikes it. There is a preparation in the College of Surgeons Museum here, the heart of a man who was assassinated in the neighbourhood of London; a small bullet passed through the heart. Upon examining the body, I found a rent in the muscular substance of the ventricle, which would admit my five fingers. It may be a question whether this takes place during dilatation of the heart, or during its contraction. In such a case the death must be instantaneous.

In conclusion, on looking to these desperate wounds in the cavities of the trunk, the surgeon's offices are very limited, but very important. They require great decision in the use of the lancet; and the patient should be raised, and the orifice made large, in order to induce deliquium; for this state of faintness not only gives time for the coagulation of the blood in the vessels, but in a remarkable manner checks the rising inflammation. For the rest, you must appear cruel to be kind; water must be food and drink; he must be kept cold and chilly, and far better lie by a dike side, than to have all the comforts and attentions of his home, and sorrowing friends.

From what has been said, p. 72 and 77, vol. i., on the track of a bullet, we may form an accurate notion of its effects in passing through the lungs. The ball may be so checked in its velocity that, after breaking a rib or passing through the intercostal spaces, it may drop into the cavity, striking the yielding lungs without penetrating them.

If the lungs are perforated, the danger will be imminent when the ball has passed near the roots of the lungs, less so, if it has only passed through the margin. In the former case, he will be in danger of suffocation from blood.

If a man dies from a shot through the lungs before there is time for reaction, his condition is this: the lungs are dark with coagulated blood; the cells are condensed and full of blood; there is blood in the cavity of the chest, and in the bronchi and trachea.

If he lives eight days, the lungs are not only solid through extravasation of blood, but condensed by inflammatory exudation—hepatised, and with the appearance of mortification. The cavity is filled with serum. On raising the body to the table for examination, it sounds like a half empty cask.

If a man has survived a wound through the lungs, and an opportunity is afforded of examining the condition of the thorax at a remote period, we find the cavity of the thorax on the side wounded, diminished of its natural dimensions, by the diaphragm having risen and adhered to the pleura and ribs; the lungs diminished in size, condensed in their substance, and universally adherent by a layer of organized coagulable lymph which lines the chest.

The symptoms of a wound of the lungs are obvious from these statements. The patient feels that flutter and nervous depression which attend the injury of a vital organ : he breathes high, with bloody foam at his mouth ; his cheeks and lips are livid, with tossing of the arms, and anxiety ; the blood rattling in his throat is drawn inwards, and into the bronchi of the opposite side, and he dies suffocated. If he survive for a few days, his suffering is extreme, and he dies from extravasation of fluid impeding the breathing, and from inflammatory exudation succeeding to the extravasation of blood.

From this statement we perceive what is the duty of the surgeon ; to bleed, to see that the symptoms are not aggravated by blood or serum, and perhaps broken ribs in the cavity of the chest. In that case, he enlarges the wound, or it may be necessary to open the thorax at the point of election.

Paracentesis Thoracis.

The *point of election* is a phrase. To open into the lateral cavity of the chest, you make an incision along the upper edge of the seventh rib : you divide the intercostal muscles ; expose the pleura ; open it with the lancet, and enlarge the wound as there may be occasion.

It is well not to make the incision direct ; that is to say, you make the incision of the integuments lower than the edge of the rib, and turn them up to cut through the intercostal muscles. By this means you obtain a valvular flap, which you can, if necessary, close down or keep open as there may be occasion.

☞ But remember what is here said ; the side of the thorax may be distended, as in the case of empyema. But after a time the matter may have been absorbed, or more likely expectorated ; then the diaphragm rises, and is ad-

herent to this point, where you are directed to make your incision.

The paracentesis may be necessary for empyema. Heister, Garengot, &c. will tell you that the patient cannot lie on the opposite side, because the matter in that case presses on the heart and lungs! This is not the case, and the reason above stated is correct. The difficulty of reclining on the opposite side is proof of the presence of matter. Percussion will enable you to decide.

Trepanning the Sternum.

As Petit, Heister, Hoffman, and others, treat of trepanning the sternum, it may become a question. As to its "being more safe than trepanning the skull," it is the expression of ignorance. What analogy is there between the cases? Petit speaks of the tabula externa and interna of the sternum. The sternum is a spongy bone with a thin shell of bone externally. It is owing to this spongy structure that, like all similar bones, it is subject to scrofulous caries. Then, indeed, matter may form under it. But the condition of that matter is widely different from pus under the skull. I have known a musket-ball strike the sternum so as to produce exfoliation of its whole substance; and cases may occur, like those described by Petit, vol. i. p. 80, in which the bone should be perforated to give issue to the pus, or it may be necessary to take the carious portion of bone away. But recollect, if you trepan here, so as to divide the bone into an upper and lower portion, or if you weaken it so that the connection is afterwards broken, that as the lower portion of the sternum moves,

in breathing, through a larger space than the upper, you will have an attrition taking place between the surfaces, attended with incessant irritation, unless the chest be swathed so as to limit its motion ; unless, as in the case of fracture, you substitute a more free action of the diaphragm and abdominal muscles for the motion of the chest.

CHAPTER VIII.

OF WOUNDS IN THE NECK AND THROAT.*

Sword wounds in the neck and throat are full of danger, from the risk of dividing the carotid or its branches, or the internal jugular vein. A wound under the angle of the jaw is difficult to manage; a sponge for a time may stop the formidable bleeding, but the irritability of the glottis prevents you from using a compress and bandage, and the vessels must be secured by ligature; it is difficult to see the bleeding orifice, the cavity fills so rapidly with blood. You dare not dive into such a part with the needle. For these reasons, it is often necessary to tie the carotid artery. But in these cases, I have advised a middle course: make a cut, as in the operation of tying the carotid; go through the integuments and platysma, then with the finger and thumb seize and compress the carotid; now sponge out the wound, and as you relax your hold of the carotid there is a jet; you see the spot; in the instant the blood is stopt, and you can raise the bleeding vessel on the tenaculum; if this should fail, you must proceed with the operation of laying bare and tying the carotid artery itself.

There is an important remark regarding the wound

* The subject may be considered as continued from p. 254, vol. i.

of veins lower in the neck, and above the clavicle. It is familiarly known that a little air let into the circulating tide of blood kills in an instant. I had the advantage of a long and interesting conversation with Baron Larrey on this subject, and he gave me several instances in which his patients wounded in the neck had suddenly expired. There is no doubt that air admitted into the veins of the neck is the cause of this sudden loss of life.

As to the manner in which the air enters, there have been very formal and philosophical discussions, altogether unnecessary. It is long since I explained the use of the great sinuses of the jugular, the raising of the platysma myoides and sternocleido-mastoideus in respiration, and the means afforded by the alternate rising and falling of these muscles, and the clavicle, of relieving the circulation of the head. It is in this act of inspiration by which the veins are filled that the air is drawn in.

At all events, it is important to notice, that in all operations where these veins are opened, you should guard against the entrance of air into them.

When he who aims at self-destruction fires a pistol into his mouth, the bullet very often goes aside without penetrating to the brain, but he dies from the powder and not the ball! For the grains unexploded driven into the fauces cause inflammation and suffocation. But if, in such a case, the trachea be opened, he may be saved from suffocation. This, however, is not enough, he must be fed through a tube.

In gunshot wounds of the neck and throat, your attention will be required to the irritation of the glottis, as suffocation may come on from the rising of the inflammation, and the operation of laryngo-

tomy may be necessary; the œsophagus may be also wounded, in which case the patient must be fed by a tube. I have seen a man starving from this wound, who might have been saved, had there not been hundreds calling for assistance, and an utter inability to afford him that continual attention which his case required. I advised a tube to be introduced from the wound into the stomach, but I know not if it was complied with. I thought it might have been kept in, and the man fed, until time and opportunity was given to pass a tube from the mouth or nostril, so that reunion might be permitted, and the œsophagus made once more continuous.

When the suicide inflicts a wound upon himself, he in no sense knows what he is about. He means to kill himself by opening the windpipe; the os hyoides often protects the vital parts,—oftener still the thyroid cartilage. If the knife has reached the carotid, the deed will in all probability be accomplished. The hæmorrhage is generally from the thyroid artery.

My predecessor in the Middlesex Hospital being under the hands of the barber, they began to talk of an attempt at suicide in the neighbourhood; on which the hospital surgeon called the wretched man a fool, and told the barber how he should have done it. The unfortunate barber retired into the back area, and cut his throat: there was no saving him! Take a hint from this melancholy fact.

Be under no delicacy in ordering the strait-jacket; although the miserable man has generally the notion of destroying himself in one way only, yet it is not always so, and if he leaps the window or poisons himself, you must be accounted remiss.

The first object is to secure the bleeding arteries. When this is done he is so far safe; but if the knife

has opened the larynx, and cut the arytenoid cartilages, he will die notwithstanding from the irritation. If the cut has been made in the trachea, he may fare better.

I hope you will find it possible to use the needle and the ligature to unite the divided tube, without transfixing the rings of the windpipe, which ought not to be done. Nor is it proper to unite the wound of the integuments closely: the irritation of the wound produces violent coughing, which bursts up the ligatures; and if they hold so much the worse. A stitch at the sides of the neck, or extremities of the wound, is enough, leaving an aperture in front to permit the air and mucus to escape, when he is seized with a fit of coughing or suffocation.

The double-headed roller is put round the head, stitched at the temples, and brought down and fixed to a circular bandage round the body. By this means the head is inclined forward, and the lips of the wound kept in contact.

They die from one of two causes,—the excessive loss of blood, or from the inflammation and irritation of the air-passages.

Of the Wry-Neck.

In the old books, there is nothing intelligible on this subject. Heister makes as regular a chapter as if he had information to convey, and refers to *Tulpius*, *Miekren*, and *Roonhuys*.

The affection arises from a morbid condition of the *sternocleido-mastoideus muscle*, and this muscle is especially exposed to disorder as a muscle of respiration, through which the

spinal accessory nerve passes.—See *Bell on the Nervous System*, 8vo, *Appendix*, p. 414.

The spasmodic affection of this muscle is very frequent ; by a succession of impulses the head is drawn to the shoulder, and the chin pitched up. Sometimes both muscles are affected, and the head is turned alternately from side to side, like the head of a Mandarin image.

These are interesting cases, but cannot be treated here. I have given cases in detail, *loc. cit.*

The muscle is subject to a diseased degeneration of a different kind altogether. It becomes ligamentous and like a cord, which checks the motions of the head, and holds it down to one side, with a twist and elevation of the chin. When this is permitted to continue, the vertebræ of the neck are directed in their growth, and a curvature is the consequence.

At an early period, I think this complaint may be remedied by champooing the muscle, and stretching the head and neck in an opposite direction ; but if this does not succeed, you should proceed to the *operation of dividing the cord*. Supposing it to be the sternal portion of the muscle which has thus degenerated, and the patient is a girl, you may pass the sharp-pointed bistoury under the origin, and close to the sternum, and cut towards you. An assistant twists round the head, so as to put the tendon on the stretch.

Or you may divide the muscle higher in the neck. Mark and avoid the external jugular vein ; make a small incision by the side of the muscle, and in the same direction with it ; into this incision insinuate the straight sharp bistoury, in the direction across

the muscle, and pressing it down on the stretched cord, you will hear it rend and give way.

A collar round the neck, and a bandage round the head, are proper aids after the operation to keep the head in position, and the ends of the divided muscle apart. When the head is so held up, the incision through the integuments will be closed, which is the intention of making it in the length of the muscle.

CHAPTER IX.

OF THE DISEASES OF THE EYE, AND THE OPERATIONS
PERFORMED ON THE EYE.

The morbid conditions of the eye make a subdivision of great extent and interest. To the physician it is of the first importance, while the surgeon's judgment and most delicate attention are required in this department.

Nervous Affections of the Eye.

Not only the optic nerve and retina, but the nerves and muscles in the orbit, are susceptible of impression, and become disordered in sympathy with visceral derangement.

Ptosia is a falling of the upper eyelid. Mark the dropping of the eyelid from debility of the attollens muscle, as distinguished from disease of the eyelid itself. The eyelid is sometimes thickened and immoveable from inflammation. The growth of the integument is sometimes so great as to require a portion to be cut away.

For the falling of both eyelids in a nervous or hysterical constitution, see Appendix to the Nervous System, p. 375.

When the eyelid is fallen, apparently from an affection of the branch of the third pair which supplies

the *attollens palpebræ superioris*, you are desirous of knowing how far the other nerves are affected. For this purpose, you raise the eyelid, and make the patient move the eye-ball in all directions. You touch the eye-ball, and ascertain that there is no defect of sensibility. If the motions of the ball be lost, and the sensibility of the surface, it is implied that there is pressure on the nerves, or disease of the brain, and into that you inquire. The indication is more unfavourable if the pupil be dilated and the vision obscured.

If there be no other function lost besides the motion of the lid, it may be a rheumatic affection of the muscle itself.

A *twitching of the eyelids* often proceeds from watching and fatigue. In morbid nictitation, you first see that there is no cause of irritation in the eye. It is probably a degree of affection of the *portio dura* of the seventh nerve.

Break the habit ere it become fixed. Foment with opium in the lotion of aqua ammoniæ acetata. Apply the opium plaster to the temple, and gentle pressure in the course of the nerve. Be attentive to the state of the stomach.

Anæsthesia of the surfaces of the Eye (i. e. insensibility).—This is very alarming when you find the whole extent of the distribution of the ophthalmic division of the fifth nerve similarly deficient in sensation. You look anxiously to the state of the nerves of motion—fearing that they may be affected—implying that they are all compressed or involved in disease.

But happily the anæsthesia is often temporary—often like the amaurotic condition of the retina—and depending on deranged visceral functions.

Oculus Leporinus, Vue de lièvre.—Authors improperly class this state with strabismus. It is an affection of the *portio dura*, and consequent defect of the orbicularis muscle. It attends the paralysis of the *portio dura*, from whatever cause arising.

You will notice that, in this condition of the eyelids, the eye-ball is pushed considerably forwards, in consequence of the want of support or of compression of the eyelids, which adds to the startled look, and has suggested the name of hare-eye. (See Diseases of the Portio Dura, *loc. cit.*)

Nystagmus.—I give it an old name, for it is a curious phenomenon. It is an incessant motion of the eye-ball. Dr Bright considers it a symptom of cerebral pressure. I have seen it an attendant on fracture of the skull, and so has Mr Mackenzie of Glasgow. But yet I find it constant in some individuals; and I have seen it in one-half of a large family of children: also in the albino. The remarkable circumstance is, that, whilst the eye-ball is thus incessantly in motion, the vision is perfect; objects do not dance before the person. One girl was a sempstress, and could thread her needle while the eye was vibrating. For the explanation of this phenomenon, see the Nervous System, *loc. cit.*

Strabismus, *Squinting*.—The most frequent defect in the eye is a weakness in the abductor muscle. When it is in a certain degree, the person sees double when the eye is in one position. For example, the abductor muscle of the left eye being affected, the patient sees with both eyes when looking to the right, and so he does when he looks straight forwards; but when he turns the eyes towards the left,

the abductor of the left cannot contract further; the left eye is fixed, whilst the right moves, and now he sees double, &c. The images are more apart the farther he looks to the left.

When the squint is established, the weak eye is turned inward and upward.

Distinguish squinting from double vision. You cannot squint at pleasure; you only distort your eyes: when you do you see double; whereas he who squints sees single. When the patient has an obliquity of vision after fever or in hydrocephalus, he sees double. In the confirmed squint, the person attends to the impression on one eye only; and if you interpose your hand between the weak eye and the object, he is not conscious of the interruptions.

The explanation of these circumstances must be reserved for lecture; and few are disposed, and indeed accustomed, to that process of induction by which the true theory is established.

I shall only say here, that the first stage is in the defect of the abductor of one eye; that it has its origin in repletion and disorder of stomach. I have lived long enough to witness the whole process. I remember the good mother of a family at table watching little master that he did not squint. "Ha! Georgie, you are squinting!" George was filling his belly. A dose brought the boy right again. But at last the distortion became fixed, and Mr George is now a proper ugly fellow.

As to the cure of squinting in children, it is obvious that there must be attention to diet. Ipecacuan vomits—warm purgatives—friction to the belly—and tonics. In the after period, it must be your endeavour to strengthen the eye which is weak and distorted, and to bring it into play by closing the other eye—"a system of exercise" with the weak eye; *e. g.* the *gnomon* of Darwin. The subject has interested physicians and philosophers, such as Buffon, Drs Wollaston and Darwin; but they have wanted the facts on which to reason.

There is a fixed distortion of the eye. In this case the defect is in the third pair, and the abduc-

tor nerve being remote from the cause of pressure, the abductor muscle prevails, and turns the eye outward. In this case a disease within the cranium is to be dreaded.

Tic Douloureux in the eye is not uncommon. The subject is treated at length in the Appendix to the Nervous System. I have only to add, that the system of cure stated there has been uniformly successful ever since.

Amaurosis—Gutta Serena of the Arabian writers—is an insensibility to light from affection of the optic nerve or of the brain. It is marked by the enlargement of the pupil, and the fixed condition of the iris. The insensibility may occur in all degrees, from that which produces night blindness (*Nyctalopia*) to the complete insensibility to the strongest light.

See a good case of night blindness by Dr Pye, *Med. Observ. and Enquir.* vol. i. p. 111. It is the defect of light on the diminished sensibility which causes the blindness on the going down of the sun. But because the defect was periodical, therefore the Doctor ordered “that magnum Dei donum”—the bark. See Periodical Recurrence of *Tic*. See Dr Heberden’s Observations on a particular Affection of the Eyes, *Trans. of the College of Physicians*, vol. iv.

Let amaurosis be distinguished from glaucoma, which is an opacity seated behind the pupil.

The defect may be what is sometimes called functional; more properly it depends on the state of the stomach, and is removed by vomits, bitters, and alteratives. Use the veratrine, joined to an ointment, and rubbed on the forehead; blisters: stimulating vapour: as the aqua ammoniæ and sulphuric æther. Electricity and sternutatories are exceptionable.

The subject might lead us to the state of insensibility to certain colours.

Muscæ Volitantes.—These are dark spots, which

are seen to float and fly before the eyes, but are in truth consequences of an affection of the retina itself. It is easy to prove that the cause of these are from a fixed imperfection in the web of the nerve, and that they seem to move from the motion of the eye.

See the paper of the most ingenious physician Dr Wells.

They are sometimes round and defined ; sometimes like filaments ; sometimes distinct, and yet transparent. They are sometimes lucid like a drop of dew, and sometimes like a cobweb.

Oculists attribute these spots to the dilatation of the branches of the arteria centralis retinae. I do not think they result from a change in the circulation within the eye, but from a condition of the nerve, and remotely from affection of stomach. They appear in the debility of fever, probably from another cause.

Another affection of the retina, arising from the same cause, is an insensibility in some part of the retina. Sometimes one-half of the field of vision is obscured. It is temporary, but may become permanent.

See Dr Wollaston's case, *Phil. Trans.* His theory does not hold. This subject, in a philosophical work, would lead us to that of spectral illusions.

Ophthalmia.

On this subject you have much to study.* The delicacy of structure, and the exposure of the eye, subject it to many influences both external and constitutional. The eye may be destroyed by inflammation in twenty-four hours.

* As proved by the extent of the work by Dr Mackenzie, a volume which combines ingenuity, research, and experience.

Inflammation from external influence, as cold and wet.—Of these you have catarrhal ophthalmia, an inflammation of the conjunctiva. There is pain as if of sand in the eye—the vessels are visibly enlarged—the eyelids stick together. It will run into chemosis and suppuration, and at length to ulceration of the cornea.

From the same source comes rheumatic ophthalmia. It is deeper seated in the coats of the eye,—the pain is pulsating and deep; the pain is around the eye as well as in it; it is especially seated above the eyebrows. This inflammation is aggravated at night, and is accompanied with fever.

Oculists make a third species of inflammation, by joining these two. In the catarrhal inflammation, you foment with tepid collyrium, *e. g.* the liquor ammon. acet. extr. opii and distilled water. You drop the solution of the nitrate of silver into the eye.*

In the deeper rheumatic ophthalmia, you apply leeches and bleed. You have immediate recourse to calomel and opium. You foment before the evening attack. ¶ You regard the iris, and if it be threatened, you guard it by smearing the extract of belladonna around the eyelid; or use a liniment of belladonna in laudanum. For the rest go to the treatment of rheumatism.

Strumous Inflammation of the eye is the most common of all in young persons. You recognise it, 1. By the sneezing and the watery eye; 2. The redness of the conjunctiva; 3. The intolerance of light; 4. The severe spasms of the eyelids; 5. By the early

* Or, R	Hydrarg. oxymuriat.	gr. i.
	Ammon. muriat. .	gr. vi.
	Aquæ distil. .	℥viii.
	Vin. opii . .	℥ii. fiat Coll.

occurrence of ulcer in the cornea ; or of phlyctænæ, which run into ulcer,—and these countenanced by the constitutional signs of struma.

Treatment.—Purge with calomel and jalap ; apply a blister to the back of the neck ; drop the vinum opii, and bathe with tepid opiate lotion ; take a small painting-brush, wet it, and touch the pencil of nitrate of silver, and then neatly touch the ulcer of the cornea. Pediluvium and Dover's powder.

You must study the subject farther, under the heads of *Ophthalmia of new-born children*, *Gonorrhœal Ophthalmia*, *Egyptian Ophthalmia*. It is from these that we have most to fear the entire and sudden loss of the eye. I have found the injection of the solution of cerussa acetata and opium to be the most effectual in gonorrhœal ophthalmia.

Consequences of inflammation in the eye, and principally of strumous ophthalmia. These are—

Chemosis, which is an inflammatory œdema of the conjunctiva.

Leucoma, which is the cicatrix of the cornea, in consequence of *phlyctænæ* and ulcer.

Albugo is an effusion of coagulable lymph in the cornea.

Hernia Iridis, when the ulcer of the cornea penetrates its whole substance, the aqueous humour escapes, and the iris falls forward into the gap. It closes the gap. Sometimes it projects black like the head of a fly (hence *myocephalon*).

Onyx is pus within the lamellæ of the cornea.

Hypopium is pus collected in the anterior chamber of the aqueous humour.

We should really conceive that oculists were the most learned members of the profession. They speak nothing but Greek ; adhesion of the iris must be called *Synechia*. It may adhere to the cornea by falling forwards, or to the capsule of the lens behind.

Lastly, closing of the pupils.

The various degrees of opacity of the cornea from the *pannus* externally to the hypopium or pus behind it, are effects of inflammation, and to be avoided or remedied by subduing inflammation, and in the chronic stage by local applications, *e. g.* the lotion of corrosive sublimate, the lotion of the lunar caustic, the vinum opii, the salve of levigated red precipitate, and the division of the enlarged vessels. ☞ And always remember to turn down the eyelid, and see that a granular state of the conjunctiva is not keeping up the irritation on the cornea.

Effects of Inflammation on the Exterior Apparatus of the Eye.

In œdema of the eyelids, you wash with rose water and a little brandy. It is probably from the habit, or a symptom of debility, though it may arise from disease within the orbit.

Ecchymosis under the Conjunctiva.—The appearance is formidable. An astringent collyrium may hasten its disappearance.

Ptyrigium, a condition of the adnata, arising from chronic inflammation ; it takes the appearance of a superficial membrane, stretching from the inner

canthus in a conical form towards the cornea. Its vessels are to be cut across with the scarificator. It may be removed altogether; but the solution of caustic will in time cause it to disappear.

We cannot be surprised to learn that the *caruncula lacrymalis* inflames, and that an abscess is formed by the side of it; and that, by continued irritation, it should rise into a tumour, which is called *Encanthis*, and that, like every part subject to tumour, the growth may be malignant.

Epiphora and *Stillicidium*.—The first is a weeping of the eye from excessive secretion of tears. The second a weeping of the eye from obstruction of the lachrymal ducts. The first comes often from wine and wassail. (Order a little bottle of the spirit of camphor and nitric æther, and let him turn it upon his finger, and anoint the upper eyelid from time to time.) The excitement will be relieved by the steam of laudanum. Put a tea-spoonful of laudanum in a cup of boiling water, and hold it under the eye. See that an eye-lash be not inverted,—there may be some such source of irritation.

The eyelid of old people is sometimes turned out, and with it the puncta. The tears not being absorbed, they fall over the cheek.

The meibomean follicles on the margin of the eyelids are affected by chronic inflammation, not unfrequently after small-pox, measles, and scarlatina. The morbid secretion glues the eyelids, and the cilia are pulled out. Various unpleasant effects follow, as obliteration of the ducts, wrong direction of the hairs, contraction or eversion of the margin of the eyelid from ulceration.

Foment with poppies, and use a mild citron ointment. When the margins are ulcerated, touch them with the ointment of *argentum nitratum*.

Hordeolum, *Stye* is a small chronic boil on the margin of the eyelid, with itching and pain. It is to be treated with stimulants, and much attention to the digestion.

The ciliary cartilage may be turned out beyond the action of the ciliaris muscle and lower portion, constituting what is called *Ectropium*. If it occur spasmodically, attempt reduction. Failing in this, it will require leeching or scarification and compression; an operation is performed of cutting out a portion of the conjunctiva. *Entropium* is the turning in of the eyelid, a most troublesome condition, since the hairs are directed upon the eye-ball, so as to produce great irritation.

In these cases, the principle of practice is to produce contraction through the means of cicatrisation; and this is done by caustic or the knife, or sometimes a hot wire. Still these learned oculists will not be satisfied with a simple description of the fact. They must have a learned name for the inversion of the eye-lashes, *Trichiasis*.

OF THE CATARACT.

The cataract—*gutta opaca*—is a disease of the crystalline humour, by which the humour or its capsule become opaque. The opacity comes on gradually, though sometimes quite suddenly.

It varies in consistence; the colour is generally a greyish-white, and then the opacity is in the humour. When of an amber colour, you may suspect it to be hard; if pure white, then fluid; if streaked, capsular.

The symptoms are, indistinct vision,—a cloud or something like gauze before the eye,—he sees worst in a bright light,—the candle is expanded into a globe.

You take care to distinguish it from *amaurosis*, and from *glaucoma*. The opaque body of the cataract is close to the iris, and accurately limited by its margin. An amaurotic person sees best in a bright light; to him the light of the candle appears spreading in rays. Even early in *amaurosis* the pupil is large, and the iris fixed, and the eye wanders; whereas, in early cataract, the iris moves freely. Belladonna applied to the amaurotic eye, makes the vision decidedly worse. The veratrine, used as an ointment to the forehead, improves it (in conversation with Alexander).

Glaucoma is an affection of the vitreous humour. It produces a greenish hue, reflected from behind the pupil.

You may have more difficulty in distinguishing the posterior capsular cataract from *glaucoma*, because it is removed backward from the pupil; but it is streaked with a deep opacity, whilst *glaucoma* is neither spotted nor streaked. In *glaucoma* you can sometimes feel a stony hardness in the eyeball.

When you examine your patient with cataract, you set him with his eye obliquely to the light. You cover the other eye. The pupil should be dilated by a drop of the solution of belladonna. You may direct a strong light upon the lens by means of a magnifying glass. You mark especially the condition of the iris, if the margin be regular, and if there be no adhesion.

The Operation of Extraction.

Dexterous operators take no assistance in holding up the eyelids or fixing the eyeball; yet Pellier's wire-speculum is a good instrument. The assistant stands behind the patient with his hand upon the patient's forehead; he draws back his head upon the pillow, which rests on the high-backed chair (not on the assistant's breast, since that moves in breathing.) If the assistant uses the speculum, it is pressed between the upper eyelid and the margin of the orbit. He rests against the bone, and does not in any degree press the eyeball,—that remains for the operator to do, by the pressure of the points of the fore and middle fingers of his left hand. The operator raises his foot, placing it firmly, so that by resting his elbow on the knee, his hand shall be on a level with his patient's eye.

He dips the point of the knife in oil; he rests the little finger of the right hand on the patient's cheek. He presses down the lower eyelid with the point of the fore-finger of the left hand, the point of the mid-finger pressing the caruncula lacrymalis.

As I am against the vanity of a surgeon pretending to be ambidexter, if the right eye is to be operated on, I advise that the patient should be laid on his back, the head resting firmly on a pillow; and that the surgeon should raise the upper eyelid with the fingers of the left hand.

It is the purpose of the operator so to pass his knife anterior to the root of the iris, and parallel to that membrane and across the cornea, that, by carrying the knife directly onwards, without a pause, it shall cut itself out, and make

the proper incision. Scarpa's knife will do this. But if the breadth of the knife be not equal to half the diameter of the cornea, the aqueous humour must escape before the incision is completed.

The incision is made one-twentieth of an inch from the sclerotic. If properly done, one-half of the cornea cut will admit the passage of the cataract.

A common mistake is not calculating the thickness of the cornea, so that exteriorly the incision takes in full one-half of the cornea, and yet, by passing superficially, an imperfect section is made for the evacuation of the cataract. Care is therefore taken, that in entering the knife, it penetrates directly to the aqueous humour.

The upper half of the cornea is divided by modern operators. This is done that the slight opacity made by the cicatrix which follows the incision, shall not interfere with the vision of things below the level of the eye, and that it shall rather be on the part usually covered by the margin of the upper eyelid.

The *misadventures* in this operation are:—1. The escape of the aqueous humour, and the consequent falling forward of the margin of the iris before the edge of the knife; still, by pressing on the cornea, you may float back the iris, and be enabled to complete the incision. Rubbing the cornea to excite the iris is nonsense. Rubbing the cornea does not excite the iris. If the margin of the iris cannot be withdrawn, the knife must.

2. The eye-ball turning in spasmodically to the inner canthus, so that you cannot carry the knife onwards. But a dexterous operator would wait, and by a fine management of the knife he would, in this event, carry back the eye-ball to its position; and pressing the cornea with the point of his finger against the knife, complete the incision.

3. If the edge of the iris should be cut, the cata-

ract is tilted. For as the iris sustains the cataract by the uniformity of its resistance to the protrusion of the disc of that body, now that one side of the iris gives way, the margin of the cataract is projected forwards, and the vitreous humour follows. There is nothing for it in this case but *extracting* the cataract with the hook !

When the incision by any such accident is imperfect, the probe-pointed knife, after a pause, is introduced, and the cut completed, or the scissors are used for the same purpose. ¶ Always remembering that the whole success of the operation depends on the incision being properly made ; properly meaning, of a just size to admit the crystalline humour to escape, and no more.

When the incision is completed, the cataract is retained by the strength of its capsule, and the uniform resistance of the iris. But the slightest touch on the capsule with the point of the knife, or with a needle, causes it at once to tear up, and the cataract starts out. Accordingly, some operators, in passing their knife across the anterior chamber, will dip the point into the pupil, and touch the capsule. Others, in withdrawing the knife, will do the same. The following is better.

The instant that the knife is carried through, the operator lets down the upper eyelid, and with his fingers over it sustains the eye during the spasm that inevitably attends the operation. Resting for a minute, with the hand covering the eye, he carefully lifts the eyelid ; and he finds, when all is right, that the cataract is slipping from under the flap of the cornea.

You perceive, then, that when the operation is well performed, it is not *extraction*. But that the incision being perfect, the action of the muscles compressing the ball forces forwards the vitreous humour, and before it the lens, and that the operation is rather the *protrusion* of the cataract

than the extraction; and I waste time on this distinction, because it leads to an important precaution. You are to guard *against the protrusion of the vitreous humour*, as well as of the lens!

Look to the right position of the flap of the cornea; see that the eye-lashes are not inverted; lay a wet compress on the eye-lids, and bind up the whole with slight support. Teach your patient to avoid straining and coughing, and to support the eye in the event of a fit of coughing.

You look into the eye perhaps on the third day, and all is well. But the inflammation and spasm may invert the eyelid after this, and inflammation and suppuration come on, and the eye is lost. Pay particular attention to the inversion of the eyelid, and to keeping down inflammation.

Operation by piercing the Sclerotica.—See the effect of not understanding the theory of the operation, and yielding to a name. They propose an operation of *extraction* by cutting behind the iris. In such a case they must *extract*. It is not to be thought of.

Operation to produce Absorption of the Lens or Cataract.

The principle on which the operation is founded is this: that when the capsule of the lens is burst, and the aqueous humour let in upon the substance of the lens, that body is dissolved and absorbed.

The pupil is dilated by solution of belladonna. The needle is put one-twelfth of an inch behind the margin of the iris; the point is brought to present in the centre of the pupil; the capsule is broken through, and the substance of the cataract puddled down, and part of the substance pushed into the anterior chamber.

Precautions.—If you burst up the anterior of the capsule too much, the cataract will start forwards into the anterior chamber. In that case the operation by cutting the cornea must be performed. (They say such an accident was the occasion of the invention of the operation of extraction.)

When a considerable mass of the cataract lies in contact with the edge of the iris, it excites inflammation in it, and that inflammation will close the pupil.

If extraction should be necessary to take the lens from the anterior chamber, wait no longer than till the iris recovers the influence of the belladonna.

The operation by absorption is also done by entering the needle through the cornea. In these operations do not attempt too much at once. Repeated touches with the needle may be necessary.

Of Couching.

This operation is supposed to be much easier to perform than extraction. The difference is, that the faults in the manner of the performance are less obvious.

The needle is passed behind the iris, the capsule broken, and the cataract depressed below the line, which the rays of light take to the bottom of the eye.

That there should be inflammation, violent bilious vomiting, and total loss of sight from this operation, is not surprising, if we consider what may be the consequence of awkwardness and violence. For example, is there any thing more frequently seen during this operation, than that the cataract disappears from the pupil, carried down on the point of the needle and *that it rises again*? What should make it rise? The truth is, that in thus depressing

the lens, the vitreous humour is rolled round,—the two humours have not been separated,—the vitreous humour is carried with the lens ; and this being repeatedly done, what is the natural consequence but injury to the retina ? and, at all events, the whole interior of the eye is as it were stirred round and disturbed. No wonder that sometimes the very worst consequences should follow.

From this it appears that the nicety of the operation is to unsocket the opaque lens with as little disturbance of the vitreous humour as possible.

Reclination.

The reclination of the cataract is an operation with the needle, in all essential circumstances the same with couching ; only with this difference, that the cataract is turned over, so that its upper margin being separated from its connection, is turned backwards and downwards, whilst the lower margin retains its hold. This operation will disturb the vitreous humour less, whilst the retina is less endangered.

Membranous Cataract is the capsule left when the cataract is extracted or couched. It may have been originally the seat of opacity,—it may have become opaque. It is to be removed by a fine adjusted operation with the needle, passed either behind the iris or through the cornea.

Closing of the Pupil.

From various causes, the iris,—the most irritable body in the whole animal frame,—becomes inflamed, and inflammation leads to the closing of the pupil.

It will depend on circumstances whether you must have recourse to general bleeding or not. Leeches are proper,—calomel and opium indispensable; and to counteract the disposition to the closing of the pupil, the extract of belladonna is put on the eyelids or temple, or the strained solution is dropped into the eye.

When the inflammation has ceased, leaving the lamentable consequence—a closed pupil,—an operation may yet save the patient from blindness.

The operation, as performed by Cheselden, was to pass a needle (sharp upon the edge) into the anterior chamber, and to make a horizontal cut across the iris.

This would be quite effectual but for two circumstances. The same inflammation which has closed the pupil, has produced opacity in the capsule of the lens. Even if that should not be so, the capsule will be opened by this incision, and the absorption of the lens the consequence. There are so many ways of opening a new pupil, that the mode may be left to your ingenuity. Puncturing the cornea, pulling out the iris with the fine hook, and snipping it, is the most approved of.

Fistula Lachrymalis.

There is a tear unbidden in the eye; a redness in the general surface of the conjunctiva; an inflamed condition of the inner canthus. Press the lachrymal sac, and turbid mucus flows from the puncta. Such is the first condition of one threatened with fistula lachrymalis. I am of the opinion of Scarpa, that it begins with bad secretion in the conjunctiva, which being absorbed inflames the passage. The mem-

brane of the nasal passage inflames and swells, the tears are obstructed, the nostril is dry. The inflammation of the sac and duct is followed by abscess, and that becomes fistula. The irritation of the eye is increased, and without the aid of the surgeon the disease is permanent. Distinguish this condition from a venereal disease of the os unguis. Distinguish also the complaint as it arises from irritation, and as it is depending on scrofula.

Cure.—Always remove the cause. Here you must correct the secretions. The fine ointment of red precipitate is applied to the edges of the eyelids. The lotion, vol. i. p. 291, diluted, is a good collyrium; or a weak solution of muriate of mercury. There is no occasion to use the syringe to inject the puncta; it produces irritation. Empty the lachrymal sac by pressure with the point of the finger, and then drop the solution into the eye; it is readily absorbed, and again by pressure on the sac the fluid is pressed into the duct.

You have your choice of two operations, two means of restoring the flow of tears into the nose; 1. that by piercing the os unguis; 2. that of making the old duct pervious.

In the first an incision is made into the lachrymal sac. In doing this, take care that you enter your knife under the tendon of the orbicularis palpebrarum; for, if you cut that across, the action of the muscle distorts the eyelids in a remarkable manner. See that you are fairly within the sac before you perforate the bone; and in perforating the bone (which may be done with the stilette of a small trochar), do not waste your strength on the nasal process

of the upper maxillary bone ! but push upon the os unguis, which is as thin as paper, and easily yields.

After piercing into the cavity of the nose, a leaden probe is used, and kept in till the new passage cicatrises round it. It is worn for weeks, and when withdrawn, the descent of the tears keeps the passage into the nose open, whilst the outer wound closes.

You may open the sac, pierce the bone, and introduce the silver style, as in the following operation. There is no necessity for wearing a great piece of bougie or leaden wire. The following method is preferred :

A style of silver of a length to reach from the canthus into the cavity of the nose, and with a flat head (generally painted black), to prevent it descending altogether, is passed into the old duct. If the fistulous opening admits the proper probe to be passed down, good ; if not, you must cut into the sac. Having done so, you force a probe into the nose through the ductus ad nasum ; and the passage being thus made good, the style is introduced. It remains there, the tears make their way by the side of the instrument, and it is worn with very little inconvenience, until the passage becomes callous to its presence, and the disposition to close has ceased ; the style is then withdrawn, and the outer wound heals.

Some will prefer introducing a little gold tube into the nasal duct, closing the outward wound over it. It is effectual. But the patient does not like it. The notion of imperfection in the cure teases him. It is apt to fall down into the nose ; or, by its presence, it may cause an erythema around the eye.

The Diseases of the Eye which give occasion to the entire extirpation of the Organ. The Operation.

The extirpation of the eye is a melancholy resource, and yet it is sometimes demanded; for disease commencing in the orbit, involves the eye-ball, and diseases beginning in the eye-ball, will extend to the brain itself, if not early extirpated.

The eye is liable to three formidable diseases,—scirrhus, medullary fungus, and melanosis (see Dr Mackenzie's work).

The high vascularity of the organ, and its exposed condition, render it liable to disease. The choroid coat,—the most vascular texture of the frame,—is sometimes the seat of fungoid disease. The office of this membrane being to secrete the pigmentum nigrum, the disease of the coat will necessarily partake of the melanoid character.

The “melanoid tumour” is properly distinguished in other parts of the frame, by the secretion of melanotic matter (black matter) in the interstices of the cellular texture. But here in the choroid, such secretion partakes of its original nature.

However, the fungoid disease of the choroid coat is of a formidable nature, and if the disease be distinctly marked, demands early extirpation. Either the disposition is present in other parts of the system, or it is rapidly propagated from the eye. A lurid appearance reflected from the bottom of the eye, with an enlarged condition of the veins of the eye, is very alarming. In the progress of the disease, vision is lost; the lens is pushed forward, and

a dark vascular tumour projects through the sclerotic coat like a staphyloma.

On examining the eye after extirpation, it is found to be occupied with a soft black texture. You look anxiously to the state of the optic nerve, fearing that through it the disease has propagated itself to the brain.

The eye must be extirpated when it is the seat of carcinoma and fungoid tumour, when enlarged, protuberant, and ulcerated.

Cancerous disease may involve the eyelids. It may begin in the lachrymal caruncle, and spread to the eye and eyelids.

All practical surgeons despair of eradicating the fungoid disease, even by extirpation. Through the optic nerve it has reached the brain, by the time the disease is marked by external characters. They also agree in the propriety of affording their patients the chance of cure by the operation.

Tumours in the orbit push out the eye-ball; and these questions will arise—Is this hydrophthalmia? Is the disease within the coats of the eye? When it is determined that the protrusion is caused by a tumour exterior to the eye-ball, the consultation will take this form. Is the tumour sacculated? If the matter be let out, is it safe to let the sac remain? If it be a mere abscess, to puncture it will be sufficient. But if it be, as it most commonly is, a proper encysted tumour, the sac must be drawn out after it is emptied.

See a well told case, *Medical Observations and Inquiries*, vol. iv. p. 371.

Again, we shall suppose that there is no fluctuation,—that the tumour is solid, scirrhus; very se-

rious questions arise, *e. g.* Did this disease begin in the lachrymal gland? You will know if it did by the tears being secreted or not. Has it embraced the optic nerve in a manner to make the extirpation of the whole organ necessary? The optic nerve may be considerably stretched and the vision remains; but if the eye is protruded, and the iris fixed, and the sight lost, it will be better to extirpate the whole. Again, has this tumour pushed through the orbital plate of the frontal bone? A tumour, even a soft one, will destroy both periosteum and bone; but if this should have taken place, then it will be announced by the frontal nerve being involved, and insensibility of the forehead. But worse than all, the disease may have propagated itself into the brain; in which case, you will probably have some sign in the insensibility or loss of motion of the parts.

If there be a sacculated tumour, you make an incision on the upper eyelid (avoiding the conjunctiva), open the tumour, and then endeavour to draw out the sac, dissecting it away.

If the tumour is in the orbit, and the eye-ball untouched, an incision upon the upper eyelid may enable you to draw it out, and to dissect it away. If the tumour is too large to be extirpated without injury to the eye, or, if it surrounds the optic nerve, the eye-ball must be taken away.

You begin the operation of extirpation by slitting up the outer canthus. You then dissect up the upper eyelid, and cut the conjunctiva. You now, with due regard to the direction of the bones which form the orbit, pass your knife deep, and cut across the optic nerve, the ophthalmic of the fifth, and the ori-

gins of the recti muscles. Then seize the mass with the tenaculum or hooked forceps, and pulling forward, you cut the remaining cellular connections. Divide the tendon of the elevator, and the tendon of the trochlearis. The whole coming then forwards, you divide the conjunctiva of the lower eyelid.

An awkward operator will keep cutting round and round the eye, with useless repetitions of incisions, prolonging the tortures of the patient. Whereas the eye cannot be brought forward until the nerves and muscles be cut across near the foramen opticum. Another reason for this being done early is, that from the moment these nerves are cut across, the operation ceases to be a painful one.

It is a useless piece of cruelty to pass a great cord across the eye, in order to pull upon !

Unless the scalpel be curved, it follows that the optic nerve, and parts in the bottom of the eye, must be cut obliquely.

The dressing is a simple filling of the orbit with soft lint, and over that a compress and bandage. The eye-lashes afterwards give some trouble, being directed inwards. A little bit of dressing between them whilst the parts are tender, and afterwards the application of adhesive plaster, will remedy this.

CHAPTER X.

DISEASES OF THE JOINTS.

On studying the diseases and accidents to which the joints are exposed, there are some relations which must not be lost sight of. You would do well to review the peculiarities in the structure and constitution of all the textures which enter into the construction of a joint; to consider to what kinds of inflammation they are most liable; and how to distinguish the scrofulous, arthritic, and rheumatic inflammation, as seated in the articulations.

A joint, from the cartilage which tips the bone to the outer tendon—the cartilage—synovial membrane—capsular ligament—accessory ligaments—bursæ—fasciæ and tendons—are all of a class of parts, low in their vitality, certainly the least vascular parts of the frame, and very peculiar in their degree and kind of sensibility. By all this it is made apparent why they are subject to certain diseases, and why inflammation rises in them in a different manner from what it does in other parts.

Let us take a wound of a joint, as directing the mind to this peculiarity. Suppose that a workman strikes the lower head of the femur with the corner of his adze or chisel, where the capsular membrane is reflected. The synovia escapes. It is a penetrating wound of the joint. As in other penetrating wounds, if it heal, all goes well, and you hear no more of the accident. But if it should not unite,

and the edges of the wound turn out with a pale granulation rising, although for some days there is nothing to alarm the man, yet the joint becomes stiff, and creaks in motion. It swells, becomes painful, and by and bye inflammatory fever to the greatest excess is lighted up. The pulse is frequent and strong, the face flushed, the eyes brilliant, the teeth are grinding with pain; and if this condition be permitted to go on, suppuration in the joint, and in the cellular membrane around it, are the inevitable consequences, and by and bye the sufferer sinks in confirmed hectic.

Take the instance of sprain, as exciting a destructive but more chronic inflammation in a joint. Suppose a man receives a contusion on the great trochanter, crushing in the head of the thigh-bone upon the acetabulum; or a woman sprains the lateral ligament of her knee; a more languid inflammation is set up, with pain, and lameness, and swelling, but not in the acute degree I have just described. What is the effect? The ligamentous texture suffers an entire change: instead of these ligaments possessing their dense texture and silvery whiteness, they have become unusually vascular, loose in texture, and of a grey colour. They are no longer suited to control the motions of the joint, or to direct the actions of the limb; the patient, from the inflammation, tenderness, and looseness of the ligamentous textures, is irrecoverably lame. If with this we have a strumous constitution, a white swelling with all its evils will be the consequence.

View the accident and its consequences in another light. Suppose a lad has fallen over a sharp stone, which has bruised the capsule of the knee-joint, and that a violent inflammation is set up in the knee. It may happen that, after suffering excruciating pain and fever, the inflammation subsides. But union has taken place in the surface, and following that, complete ankylosis—that is, union by bone. It is in all respects interesting to observe the consequences of the loss of motion in the joint, the loss of its natural play, and stimulus to perfection of structure.

Synovial membrane, ligaments, bursæ, have degenerated from their natural texture into a uniform mass, little if at all different from the cellular membrane; and the muscles, whose proper office was to move the joint, being equally deprived of their action, lose their massiveness, and waste away.

This effect of loss of action should be thoroughly understood, and I have never found a more illustrative case than that narrated by Baron Larrey. A dislocation of the shoulder had taken place, with such violence that the head of the humerus was thrust between the ribs, where it lay in contact with the soft and yielding lungs. Can you suppose a more secure place of lodgment? And yet there the bone wasted and lost its form, and the head was no longer recognisable!

These are admirable illustrations of Mr Hunter's doctrine, that the free use of a part is necessary to the perfection of its structure.

We learn from these views what is necessary in the treatment of inflammations of the joint proceeding from violence.

Whilst yet the inflammation is confined to the limb, bleeding by leeches is to be preferred; but when the inflammatory fever rises to a great height, on the principles laid down (vol. i. p. 11), you must have recourse to the lancet, and after that the purgative with antimony, and after that the opium and calomel, and failing that the colchicum; the acetum colchici in the purgative draught, or the extract in a pill. You do not attempt counter irritants in the violence of the attack; but in the chronic state, liniments, such as that with oil, turpentine, and acids—the linimentum ammoniæ cum opio—blisters—mercurial dressing—steaming—the warm douche, &c.

When the inflammatory action has subsided, if the joint retain the slightest power of motion, passive motion, friction, champooing, and stimulating liniments may yet redeem the joint.

You perceive the advantage of the quack and the rubber : by loss of motion the structure is lost ; by regular exercise it is restored ; and the only secret is to stop short of exciting to renewed inflammation, and to subdue it as it rises.

There is another consequence of inflammation of a joint combined with motion, which the practitioners would do well to consider.—*Return to page 188, vol. i.*

Loose Cartilages in the Knee-joint.

How these bodies are formed is not satisfactorily explained : it is, however, sufficient to our present purpose to observe, that they can be traced to a remote inflammation in the joint. They are firm, smooth, and lubricated, generally about the size of an almond. They glide about, and are with difficulty fixed.

A young man shall be in full vigour and activity—perhaps playing a match at cricket—when he will be tripped and thrown down, attended with a sickening pain in the knee. The cartilage which lay in the recesses of the joint has been forced between the bones, so as to check or lock their motion. The sufferer must go limping home, unless, by bending the knee, and by a certain manipulation, he can get the body to resume its place. This condition of the joint is combined with effusion of fluid into it.

The practice in these cases is first, by bandaging, to cause the absorption of the fluid, and to keep the

parts so braced that the loose cartilage is confined. But this is only palliative, and we are sometimes called upon to extract this body. From what is delivered above, you perceive the danger of wounding the joint by this operation ; and therefore I have preferred the practice of Mr Copeland of London, which is, to chase up the cartilage with the points of the fingers to the line of the reflection of the capsule upon the inside of the head of the femur, and there to fix it with a ring and compress and bandage. Singularly enough, the cartilaginous body adheres ; and if it adheres, it is absorbed.

If the operation of extraction must be done, I would advise the following manner :—1. Having forced up the body on the inside of the head of the femur, it is the business of the assistant to hold it there, with every precaution against it slipping away. 2. Draw the integuments aside, and make the incision with a very sharp scalpel, carrying it lightly so as not to press on the cartilage. 3. When the thin synovial membrane alone covers the cartilage, pierce it with a strong couching needle, and strike the cartilage so as to fix it. 4. And now, drawing the knife lightly by the side of the needle, you cut the capsule, and lift out the cartilaginous body. When the wound is permitted to retract, and the integument to take its natural position, the incision is oblique, and will more readily adhere than if the cut had been made direct into the joint.

When I have seen the cartilaginous body escape into the joint during the operation, the consequences have been disastrous. The working of the joint to get the body again into its place, and opposite the wound ; and the escape of

synovia and exposure of the joint, have been followed with all the consequences which I have stated to arise from an accidental wound of the joint; and it has been necessary, from the wide spreading suppurations, to amputate the limb.

Dropsy of the Knee-Joint—Hydarthrus.

Effusions into the knee-joint may come, like other dropsies, from the weakness which follows inflammation; but most frequently they arise from some defect of constitutional power, neither definable nor very obvious, unless in their consequences. We see it in the strumous, and in that condition produced by the debilitating effects of mercury; and sometimes in the strongest frames, when we must turn in our minds the possibility of arthritic or rheumatic inflammation being the cause. The swelling is colourless, but you easily distinguish it from white swelling by the undulation, and the distinctness with which you feel the patella and points of bone.

You see a fulness on each side of the ligament of the patella; it undulates on tapping with the finger. You perceive a fulness above the patella, and in the bursæ, under the tendon of the quadriceps muscle. If the disease has gone far you press down the patella, and you are sensible that it is, as it were, floated off the trochlea of the femur, and you feel that you can strike it against the surface of that bone.

By the application of a roller, in a night's time the fluid may be made to disappear by absorption. But this is not a cure. The disposition to this superabundance of secretion must be destroyed. The local means are, rubefacients and blisters; stimulating liniments, with cantharides or

with iodine ; the ointment with hydriodate of potass ; stimulating plaster, rolling, &c. The constitutional means are, alterative mercurials in pills, liquor potassæ in bitter infusion, sarsaparilla in various preparations with lime-water, bark, and soda. In the convalescent state, let him have a laced knee-cap. As to opening the joint to evacuate the fluid, the proposal is ridiculous, as you can always cause the temporary absorption of the fluid by pressure. You gain nothing by puncturing but the danger of an uncontrollable inflammation.

Scrofulous Inflammation of the Joints. White Swelling.

The whole apparatus of the knee-joint from the cartilage to the integument—the cartilage, synovial membrane, capsule, ligaments, bursæ, and tendons—are of one texture, certainly of one disposition as to disease ; they are prone to scrofulous inflammation. The disease is apt to be formed by injuries, as blows and sprains, especially in a reduced state of bodily health ; more apt to be produced by the strumous constitution. It may take place without any direct cause, partly from strumous constitution, when the case must be considered as most unfavourable.

The term white swelling (*tumor albus*) is a very proper term ; it characterizes the peculiar nature of the swelling, which arises from disease of the internal apparatus of the joint—the synovial membrane or cartilage.

For example, if a young woman should present in the waiting-room of an hospital with a great swelling of the knee, inflamed and red, and tender to the touch, that is not a dangerous complaint, it is *the house-maid's knee* ; she has been hard at work on her

knees scrubbing the floors,—an honest, industrious girl, and so you can comfort her by saying in a short time she will be well. But if the next patient have a swelling of the knee not compressible (*nulla pressione mutabilis*), with no discoloration, but only a few blue veins visible upon the surface; if she has had deep pain without apparent cause; if the hamstring tendons begin to be rigid, and the swelling feels as if it were an actual enlargement of the bones (which it never is), that is the formidable white swelling of the knee, the *fungus articuli*.

In the second stage of this disease, paroxysms arise from time to time; the pain is great, with fever, and followed by suppuration, and abscesses burst, with relief. But, unfortunately, the inflammation rises again and again, and at each period of aggravated pain there is abscess, and these abscesses degenerate into sinuses, which surround the joint, and which in the end communicate with the cavity of the joint.

In the last stage, you see the knee-joint large, and larger by contrast of the wasted thigh and the wasted leg; contracted, owing to the rigid condition of the hamstring tendons.

On dissection of such a joint, the synovial membrane has become vascular, and hangs in grey shreds; the cartilages are ulcerated and wasted; the ligaments have lost their brilliant shining and dense structure; the whole apparatus of the joint has degenerated.

Treatment.—Understanding always the necessity of attention to the constitution, the local remedies are these:—1. At first the douche of warm salt-wa-

ter; friction of stimulating liniments, and rolling with flannel. 2. Blisters in succession round the knee. 3. Surrounding the knee with slips of lint, spread with equal parts of mercurial ointment and emplastrum thuris; over this oiled silk; over that cotton wadding, and over all a light roller. 4. Caustic issues or moxa, covering these with the water poultice.

I have procured ankylosis (which in the advanced stage is the only means of cure), by passing a seton across the knee. But, on the third attempt, I lamentably failed. Nothing of this kind should be attempted unless in desperate circumstances, and where the patient is prepared to submit to amputation if the effect should be dangerous inflammation.

As to the question of amputation, we may look upon it, in the first place, in this light. It is not any particular condition of the knee that authorises amputation, but that the hectic fever consequent on the local disease is endangering the life, and when it appears that he will sink, unless the source of irritation be removed.

But, again, conceive a lad at a period of life when he should be obtaining his education, or learning a profession or an art on which his future subsistence must depend, the limb is contracted and wasted, so that even if he could stop the disease in the joint he must be lame for life, there may in this case be propriety in amputating.

It is essentially the same disease which appears in the other joints, the character somewhat altered by the peculiar position or structure of the joint, as, for example, when the disease is in the hip-joint.

Disease of the Hip-Joint. Morbus Coxarius.

This is the scrofulous inflammation of the hip-joint. *Camper* finds it most frequent in children of a year and a-half old; *Albers* between the third and the twelfth year; *Morgagni* mentions the occurrence in an infant. I have detected the convulsions of a child to be attributable to commencing abscess over the hip-joint. Indeed, I am of opinion that the joint is sometimes hurt in delivery, when there is a cross birth or breech presentation. I have known the thigh-bone broken in bringing down the extremities in the latter case. Men of fifty and sixty years of age have inflammation of the hip-joint. It is then you will have difficulty in distinguishing the complaint, from sciatica and from rheumatic affection of the muscles of the hip.

Pitch of the Pelvis. Consecutive Dislocation.

When the hip-joint is inflamed, there is an insensible effort made to relieve the inflamed capsule from pressure, by relaxing the tendons of the muscles which pass over the anterior part of the joint. These are, the psoas and iliacus internus muscles. To do this the knee is raised or the body bent forward. The patient lies habitually on the other hip, and the spine is bent to the diseased side. The consequence of this continued position is a poisoning of the pelvis that raises the ilium of the diseased side higher than the other, and appears to shorten the extremity which is diseased.

Another peculiarity in the position of the patient with diseased hip, is that of throwing the thigh of the affected side over the other, that the head of the thigh-bone may be raised so as to relieve the inflamed socket. The thigh-bone becomes as a lever

loaded at the lower end, by which the upper end is raised, and the pressure taken off the inflamed glenoid cavity. It is a position of great relief, but the consequence is actual dislocation in extreme cases; for the strength of the ligaments being destroyed by the process of inflammation, the head of the femur is actually raised out of its socket and drawn aside. However, the appearance of dislocation is very frequent, the actual dislocation exceedingly rare.

A circumstance which puzzles not a little is, that in some cases of diseased hip, the signs, as regards position, are all reversed. The limb is longer! The explanation is, that the lad has been limping about with his diseased hip, and not confined to bed. The same cause,—the inflammation and tenderness of the hip,—makes him throw the affected limb forwards. He never permits the weight of his body to come perpendicularly over the limb of the diseased side; for in that case the weight would bear on the inflamed hip. He bears on the sound side, and pushes the diseased limb forward, which at length produces an obliquity of the pelvis,—a pitch exactly the reverse of what takes place when the patient is confined to bed. The limb seems longer.

A writer adds, he “cannot understand how parts so remote as the spine and the hip should affect each other.” This comes of studying surgery without the basis of anatomy. See what has been delivered under the head of lateral curvature of the spine, vol. i. p. 135–6.

The hip disease sometimes attacks by slow degrees; the boy plays with his companions, and while heated and active is not lame, but when he comes

home at night, the hip becomes stiff and painful. By and bye, the lameness is more apparent, and rather to his parents than to himself. This is the condition of the hip which may be confounded with the blight or want of growth in the whole extremity.

In examining the lad, place him stooping forwards, his back towards you, the clothes thrown up: 1. You perceive a difference in the convexity of the nates; the diseased hip is flat, and appears broad; the sound hip convex, with the peculiar form given by the action of the gluteus muscle. 2. You now lay him at length; observe the length of the extremities, compare the knees or heels with the relative place of the superior anterior spinous process of the ilia. 3. You take hold of the sole of the foot, and push the extremity up so as to make the head of the femur strike into the acetabulum. 4. You press behind the trochanter major. 5. You rotate the thigh-bone. 6. Finally, see if he can stand and raise the other foot from the ground.

Before you have done all this, you will have discovered inflammation of the joint, if present. You farther inquire, has he pain in the inside of the knee? does he start in his sleep with spasms in the limb? is he hectic, with fever at night?

The disease being confirmed, it is too easily characterized. The thigh is wasted, is raised towards the body; the hip is protuberant, inflamed with abscess, making its way under the integuments; the abscess becomes an open sinus, and the patient is wasted with confirmed hectic.

The effects as visible on dissection are, 1. Inflammation and swelling of the soft secreting substance around the liga-

mentum teres; 2. A loose condition of the capsular ligament; 3. Ulceration of the cartilages of both surfaces; 4. Abscesses degenerating into sinuses around the hip; 5. The head of the thigh-bone absorbed; 6. The acetabulum ulcerated through; 7. Scrofulous matter in the bones; 8. In the chronic case, irregular configuration of the head of the thigh-bone and of the acetabulum, with porcellaneous surfaces of thin bones.

The natural cure of this formidable complaint is by the occurrence of circumstances which stop the motion, and consequent attrition of the inflamed parts, when the disease terminates in ankylosis.

Treatment.—1. On the first suspicion, the warm salt hip-bath, with stimulating embrocation; liniments; the warm stimulating plaster. 2. Rest enjoined, with a pillow between the knees; a succession of blisters. 3. Issues; when attended with pain in the knee, a blister on the inside of the thigh; a seton there. 4. Moxa or the cautery applied in successive spots round the hip. Attempts should be made to fix the joint.

When the cure has taken place in consequence of ankylosis, and the thigh-bone has stuck out at right angles to the body, it has been ingeniously devised to cut across the cervix, and to allow extension of the limb!

One more important discussion remains under this section. It regards the excision of diseased joints. The idea was suggested by Mr Park of Liverpool, in the last age. He cut off the diseased surfaces in white swelling of the knee, a very bold operation. This operation, I believe, is not now executed. However, we have seen that the head of the humerus may be taken away, with the surface of the glenoid cavity of the scapula. The excision of the heads of bone entering into the elbow joint, is an operation frequently performed. Mr Arnott, my colleague in the Middlesex Hospital, patronized this operation,

and several times performed it. I do not object to it when there is a portion of exfoliating bone, but I do when there is only disease of the synovial membrane and cartilages, and sinuses around the joint; for such a case is to be cured by anchylosis.

Your first attention, *as in all these cases of diseased joints, is directed to the restoration of the health.* Your next object is to secure perfect rest to the inflamed surfaces, by fitting a proper tin-splint to the arm, taking care that it shall correspond with such a degree of flexion, as in the event of success will leave the hand at liberty. You must spread slips of lint with a composition of the emplastr. thuris, and mercurial ointment. These you place round and round the whole joint, above and below, leaving passages for the discharge from the sinuses. You then roll the arm carefully from the wrist nearly to the shoulders, opening a hole (*une fenêtre*) in the bandage opposite to the ulcer or sinus. You then lay the arm on the hollow splint and secure it. But, above all, you are careful to keep the arm above the level of the body on pillows, whilst he is in bed, and supported high by an apparatus resting on his side, if he be otherwise in a condition to walk in the garden.

By such means you will see the œdema of the arm subside, the discharge diminish, and the health recover; and in time anchylosis will be accomplished.

You perceive the same means in all cases of ulceration in the lesser joints.

Professor Syme has successfully practised the excision of the ends of the bones, and has published on the subject.

CHAPTER XI.

ON TUMOURS, CANCER, AND DISEASES OF THE
MAMMA.

Mr Abernethy conceived that he had made an important step, when he defined "*tumours* to be such swellings as arise from some new production, which made no part of the original composition of the body." By this he meant to exclude all "simple enlargements." But whatever he meant, the definition does not accomplish the distinction. A diseased growth : *morbosum augmentum* is nearer the truth, for a tumour may have the most formidable effect, and the most threatening aspect, and yet contain no matter distinguishable from what in other localities is natural, *e. g.* fat, bone, &c. "Diseased nutrition" is better, and yet *nutrition* is not the word.

We must return to our first position, that, while the whole frame of an animal body is ever changing, it is controlled, its texture, composition, and exterior form, preserved by a law of the economy. When this natural and healthy process is disturbed, and a morbid growth substituted, it has the essential character of *tumour*. Let us only distinguish that excited state and increase of the natural actions, as in phlegmon, and we shall separate mere tumefaction from morbid increase or tumour.

The discussion on Mr Abernethy's argument, drawn from

the statement of Mr Hunter, must not occupy these pages. See preface to his *Classification of Tumours*.

I shall just cite one of his cases, page 12, in illustration. "A medical practitioner bruised the upper part of his thigh against the pommel of the saddle, in consequence of the horse starting. The bruise and inflammation soon disappeared, but after some months he perceived a tumour, &c.; he came to London and had it removed. It was an adipose tumour," &c. Now, my distinction is this: the "inflammation and tumefaction" first arising was a natural consequence of injury; the growth which commenced when the tumefaction subsided was a *tumour*, a morbid increase, in which the natural dimensions were overleaped, and *with no tendency to restoration*, no controlling influence to restore the natural configuration.

It is a consequence of this theory, that parts which have ceased to be in full action, by ceasing to have the natural control, fall subject to disease: thus do the mamma, the ovaria, the uterus, to which we may add, perhaps, the prostate gland.

Tumours may be arranged according to their structure and composition. As, for example, tumours *by preternatural growth of substance*, which will embrace tumours of the skin, fatty tumours, and simple exostosis.

Again, tumours, unnatural in structure and form, and containing matter foreign to the body, as polypos, sarcoma, fungoid tumour, carcinoma, &c. Lastly, encysted and secreting tumours.

Mr Abernethy's enumeration is this:—1. Common vascular sarcoma. 2. Adipose sarcoma. 3. Pancreatic sarcoma (in structure like the pancreas). 4. Cystic sarcoma. 5. Mammary sarcoma (like the mammary gland in structure). 6. Tuberculated sarcoma. 7. Carcinomatous sarcoma.

I must admit that these distinctions serve no practical purpose. The whole essay is inferior to Mr Abernethy's other writings.

The French have other denominations; *e. g.* Scirrhus tumour—Encephaloid tumour—Fibrous tumour—Mélânose tumour—Tubercle—Cartilaginous tumour—Fibro-cartilaginous tumour.

The melanoid tumour may require a note. In some tumours, and in some conditions of the cellular membrane without tumour, there is the infiltration of a dark substance like the pigment of the choroid coat of the eye. See Diseases of the Eye.

I shall not engage you further in this very unsatisfactory discussion, but proceed to make some remarks on the treatment of tumours.

The sclerotic state.—Distinguish the condition (generally the forerunner of real tumour), which arises from mere irritation, and the interstitial secretion of coagulable lymph. I would call it scirrhus, were not the term somewhat indefinitely used, and sometimes applied to the most formidable tumours; for it is the consolidation of a part by interstitial deposition, without peculiarity of action. This is the curable condition of what are called tumours.

The intelligent practitioner discovers the cause of this excited action, *e. g.* swelling of the testicle, to be in the urethra,—swelling of the mamma, to be in the uterus; and whilst he diminishes the action, he removes the cause.

The means directly applicable to the state of the tumour are repeated leeching—counter irritation, as blisters and setons—the mercurial ointment—the ointment of the hydriodate of potass—rest and compression, with appropriate alterative courses of medicine.

When you have to take out a tumour, consider its nature, and what is the natural limit to the diseased action: for example, the capsule of the cellular membrane which surrounds a gland does not necessarily

participate in the disease ; it becomes firm and more distinct from the pressure of the growing tumour, but still it is no part of the disease : therefore such a tumour, though seated deep, is easily taken away ; for, having cut down to the proper surface of the tumour, the handle of the knife and the finger goes round it, without further dissection.

In taking out such a tumour, you will find it retained at one point ; that is, where the vessels and nerves pass to it ; and on cutting that connection across, the artery will spring.

On the other hand, in operating on the various fleshy tumours to which authors have given the name of *vascular sarcoma*, *fibrous sarcoma*, and *cystic sarcoma*, let this be the first consideration—are they limited by a capsule (not a cyst), or have they extended by drawing in the surrounding substance into their own nature. In the latter case the operation is desperate, because you have no limit nor direction, and must cut wide, and take away all that is suspected to be contaminated. This precludes the attempt at extirpation when the tumour is seated among important parts.

Scheme of Operation on a Tumour.

Let us take an example of a tumour to be extirpated, and see how an experienced surgeon would set about it ; *e. g.* a tumour on the angle of the jaw.

He would, *first*, consider if it were loose or attached ; he would relax the *platysma myoides* and *risorius Santorini*, observing if they held it down,

and gave it the appearance of adhesion, which it had not in reality. *Secondly*, He would press the veins low in the neck, to make the external jugular swell, so that in his incision he should not unnecessarily cut it across. *Thirdly*, If the incisions must pass over the cheek, he would pass Anel's probe into the parotid duct, to guard that duct during the operation, intending, if possible, to avoid the duct, and the trouble of a fistulous opening afterwards. *Fourthly*, He would calculate the depth and attachments of the tumour, with respect to the external carotid artery and its branches. By this he would have a forecast of what was necessary on account of hæmorrhage, and determine whether it were necessary to take up the carotid, or so to expose it that it might be held and compressed during the operation.

In the same way are the operations on other glandular tumours—*e. g.* in the neck or the axilla—to be studied, and the plan of operation determined by the anatomy, and the bearings of important parts.

Cystic Tumours.—In operating on cystic tumours, whatever may be the contents, the cyst is the disease, and must be brought away. It is the cyst which secretes, and it is the consistence of the secreted matter that gives the name of *steatome*, *atherome*, and *mellieres*. When the matter is merely evacuated, a fungus springs from the interior of the sac.

It is from the inverted cyst that these extraordinary horn-like excrescences are derived, of which you may read strange things.

The wens so common on the scalp of adults are *atheromatous cysts*. See that you manage their extirpation better than I have witnessed in operation. I have seen the sur-

geon cutting them out by dissecting them round with the same pleased expression and professional pride which is given to the painter in Hogarth's print. Nor should you puncture and squeeze out the matter; but do this: With a sharp scalpel cut the tumour through at once, after which the patient should not feel the slightest pain; for you seize upon the sac, and the slightest touch of the knife allows you to draw out first one half, and then the other. The integuments fall together and fill up. Not so, however, if you pinch, and bruise, and irritate.

When tumours are malignant, such as the *carcinoma*, the *medullary sarcoma*, and *fungus hæmatodes*, you must be cautious in promising a successful issue.

1. Has it been rapid in its growth hitherto? (because tumours have a prescribed life, and as their early stage is so will their later be). 2. On tracing the lymphatics to the first set of glands, is there an inflamed cord,—are the lymphatic glands affected? 3. How is the countenance,—is it natural and healthy, or dull and earthy? 4. Are there any internal affections, scirrhus of viscera, &c.? 5. Does the tumour adhere to the great vessels,—to the joints? Has it drawn in the membranes of the great cavities?

All these circumstances are taken into consideration by the experienced surgeon, who values his patient's life and the credit of the profession, more than the eclat of an operation.

In considering the practical question as it regards tumours which have no capsule, or condensation of cellular membrane around them, we ought to include those fungous bleeding tumours, which readily draw the surrounding substance, be it what it may, into the same diseased condition. It signifies little where or when I made the observation, but much experience has confirmed the observation, that these tumours have in their nature a capacity of destroying surrounding structure, without the usual effects of

reaction or thickening. They, in coming into contact with the great vein of the thigh, for example, will open it in such a manner, that the blood from the vein will be poured into the cellular membrane of the tumour; and then it will become a question whether or not the tumour has been caused by a "bursten vein," or be of the nature of aneurism, for as it opens the vein, so may it open an artery.

These fungous tumours are found with layers of coagulated blood in them; not originally the product of the tumour, but resulting from a circumstance not less formidable,—the destruction of the coat of the vessel with which they lie in contact.

See Scarpa on Aneurism; John Pearson's Medical Communications, vol. xi.; Pott's works; *Observ. sur de Tumeurs Sanguines*, par M. Breschet, &c.

There is one circumstance which these celebrated men and their successors have failed to notice, viz. I have long since explained that the pulsations of the foot, when one leg is placed over the other knee, is not from the pulsation of the popliteal artery, but from the united forces of the muscular arteries of the calf of the leg. Now it happens, that when these tumours grow, as sometimes they do, from the head of the tibia, or are in other circumstances whereby they receive the pulsation of the great mass of capillary arteries,—that they receive an impulse and pulsate; hence have arisen the questions which are discussed in the ingenious M. Breschet's paper,—Are they aneurisms, and can they be cured by the ligature of the artery?

OF THE PERIOD OF LIFE AT WHICH CARCINOMA
MAMMÆ APPEARS, AND THE MANAGEMENT OF THE
FEMALE CONSTITUTION WHEN THREATENED WITH
SCIRRHOSES.

1. There is a family peculiarity of constitution connected with carcinoma. A woman in whose family scirrhus has appeared ought to be more than usually cautious in attending to her health, and to the functions which have been called "non-natural," as she advances in life.

2. There is in my mind a strong alliance between scrofula and cancer; so that, in a family in which struma is inherited, there ought to be special attention paid to the women of that family at the change of life.

3. It is with carcinoma as with other diseases; it is apt to prevail in the descendants of such as have suffered from the disease. "I am come to you," says a patient, "because my mother and aunt suffered from what I am now threatened with."

4. The age at which the disease prevails is from forty-five to fifty-five. The mammary form of the disease is more acute, or runs a more rapid course at forty-five, than from fifty-five to sixty-five or seventy.

5. In man, as well as in females, we observe a climacteric period; and it is well to notice what takes place independent of uterine disturbance.

This condition is marked by a gradual decay of

strength, a listlessness of mind, and incapacity for business; sometimes great depression of spirits; the secretions are wrong; an irregular slow fever affects him; there is thirst, but no want of appetite; and there is increased action of the kidneys.

At such a time the mind should be supported by friendly and social intercourse, travelling, and change of scene. The digestion should be watched, and exercise enforced.

If at such time some family misfortune or great distress should unhappily befall, ten to one that the patient will not bear up against it; some organic disorder will begin to shew itself, with a certain indefinite change in the countenance and general appearance; but very often this condition passes off, and vigorous health is again established.

6. By this digression I mean to infer, that in women the change of constitution may not at all times depend upon uterine influence, but may have a source more akin to what takes place in the other sex.

7. Yet I must affirm, that, in ninety of one hundred instances of constitutional disturbance at the period alluded to, the ovaria and uterus are the source of disturbance.

Every change in the ovarian circulation has its effect upon the mammæ. Menstruation, conception, quickening, delivery, all influence the breasts; and on the final termination of ovarian action at the turn of life, the irregularities in menstruation produce the most decided influence on the mammæ, and lay the foundation of the disease which we are considering.

It is the disturbance of the uterine system, which, at the change of life, produces irregular flushings of

the face and depression of the spirit. We may see the individual flush, and hear her sigh; she then breaks out into a perspiration, and the attack is over. This condition of the female system is said to subject them to inflammation and congestion, rheumatism and erysipelas. I am inclined to believe that it does.

8. The number of young women, from the age of sixteen to twenty-five, who have presented themselves in the Middlesex Hospital with lumps in the breast, is fully equal to those who have presented, at a later period of life, with carcinoma. We have to trace an influence of the same kind in both. Irregular uterine action will, at the earlier period, produce strumous lumps in the breast; at a later period of life, the same influence will lay the foundation of carcinoma.

A young woman from the country presented herself, with a hard tumour in the mamma, to have the breast removed. It was decided in consultation that it was unnecessary. Upon inquiry, it was found that she had suffered the other breast to be removed, under circumstances exactly similar to what now presented in the remaining breast. This young woman went out well.

We have a parallel instance in man. A sore throat will swell the glands in the neck of a youth, and they will come to scrofulous suppuration; a similar irritation on the lymphatic vessels in a man of fifty or upwards, will produce a scirrhus tumour of these glands which will not subside.

As there is a coincidence in time, so is there a considerable resemblance in the nature of diseases which fix upon the ovaria and mammæ. The difference is chiefly owing to *their position*, as *internal* or *external* parts. The scirrhusities and hydatid tumours to which the ovaria are subject, would be-

come fungous ulcerated tumours were they attached to the skin.

On the other hand, many of the hydatid and incysted tumours which infest the mamma, and are the forerunners of so many distressing cases of fungous ulcers and ill-conditioned sores, would smoulder, and partake of a chronic state, that would hardly interfere with the term of life, were they seated in parts internal.¹ This consideration has led me to the practice I have to recommend in dressing the breast.

¹ This is illustrated by the progress of abscess: of a ball towards the surface—of diseased bones—of a lymphatic gland. See vol. i.

These remarks lead to distinct objects in practice; to remedy the defects of the female constitution, and to allay the local irritation of the uterine system of vessels. I have mentioned the condition of the constitution in men at this period of life; and I may here notice, that the prostate disease offers a fair parallel with the glandular disorders of the female; and that it is one of the sequelæ of the same condition.

To me, who in early life knew the merit of Dr Plummer's pill and diet drink, and its habitual use by the old practitioners of Scotland, it was matter of surprise, about five-and-twenty years ago, to see the same treatment become quite the fashion in London under the authority of Mr Abernethy's name. That gentleman had the unhappiness to estimate public opinion very low; and, singularly enough, the manner which marked his contempt became the source of increasing popularity. I speak of this, because I

am apprehensive lest the admiration of Mr Abernethy's practice may have gone so far as to produce a sort of reaction, and that it may become altogether neglected.

But the system is founded in reason and in experience; the blue pill and the bitter purgative—the compound calomel pill and the sarsaparilla, are the means of exciting the secretions of the bowels, and of soothing them by removing whatever irritates.

The bowels may be disturbed, and yet neither pinch nor give pain, but only produce irritability and nervous depression; or they may lay the foundation of organic disease.

It is only a wide experience that can exhibit this; and to a patient, judging by his individual experience, the conduct of his physician appears like obstinacy.

With respect to the irregular and disturbed menstruation, it may be taken, as a pretty general rule, to treat it by a cooling regimen—the tepid shower-bath—much gentle exercise in the open air—and change of residence, if circumstances admit of it. Travelling imposes on the rich and indolent a condition the most nearly approaching to that state of nature and freedom which the peasant has by necessity.

There will be found in the following cases notices of women of a corpulent habit, and in apparent health, but with pains in the breasts, enlargement of the belly, sickness and suppression of the menses; such women, without much care, will have confirmed scirrhus.

When the menses terminate suddenly, and recom-

mence with something like flooding, we cannot but suspect some disease, already showing itself in the uterus; and that the flow of *blood*, with unusual pain, proceeds from some such source of irritation.¹ This is the condition which requires the utmost attention: camphor, in pretty full doses (gr. iv.), with extract of hyoscyamus (gr. iij.), and opium (gr. ss), may be given to allay pain.

¹ I have attended in consultation, on the supposition of confirmed cancerous disease of the uterus, when the case has terminated favourably by the delivery of a mole or clot. However, disease in the uterus produces hæmorrhage, and an accumulated clot; which being discharged, another forms, and the distress returns after some months, and is again relieved in the same manner. But the clot is the accidental effect of the issue of blood; the accumulated mass is delivered, but the *disease* is progressive, and is at last attended with the usual and characteristic symptoms.

It certainly is not desirable to see the menses suddenly interrupted; small bleedings (*les petites saignées*) at this period used to be much the practice. I confidently recommend the blood to be drawn from the hæmorrhoidal vessels by leeches once a fortnight.

The warm salt hip-bath has a very soothing influence.

When there is pain shooting from the back to the pubis, and tenderness of the spine, which is a very frequent attendant on uterine irritation, warm fomentations, with anodyne extracts in solution,* ap-

* Mucilage of quince seeds, and extract of hyoscyamus or conium. The pipe being passed through a piece of sponge, the vagina may be filled without pain or inconvenience.

plied to the os tincæ and vagina by a properly contrived injecting apparatus, serve much to allay irritation.

As soon as there is any indication of disturbance in the mamma, a seton or issue should be made in the arm.

With respect to purgatives, it may sometimes be proper to use aloëtic and other warm purgatives; which operate on the rectum and hæmorrhoidal vessels; but sometimes these are to be especially avoided, and rhubarb, senna, sulphur, and jalap, to be preferred.

In the case of threatened carcinoma, a change of diet is advisable; nothing is so effectual in inducing a change on the constitution. Coffee and milk for breakfast; rice-milk, with cinnamon, in the forenoon; pudding of sago, and an egg, for dinner; and milk and soda-water, with a biscuit or rusk, in the evening, is enough of nourishment. If our patient has been in the habit of taking meat at dinner, with a heavy supper, and something comfortable at bedtime (which is the way of life led by a large proportion of the middling classes), we may expect present advantage from such a mode of living as I here advise.

The treatment constitutionally and locally, which is adopted with advantage in cases of struma, is advisable in threatened carcinoma.

Of Superficial and deep-seated parts as influencing the progress of Cancer.

By an external part I mean such as, being seated near the skin, is rapidly drawn into action through the influence of the vascular surface. A deep or internal part is removed from this influence, and its diseased action is proportionally slow.

The ovaries and mammæ are in some circumstances very similar. They lose their natural functions at the same time; they are subject to morbid excitement at the same time; and they, in fact, exhibit similar diseased appearances. But they differ in this,—that the ovaries have their natural structure destroyed and obliterated, and become the seat of scirrhusities at the change of life, which remain quiescent through the remaining portion of life. This is especially the case where the tumour is seated towards the fundus of the uterus. If the disease is in the os tinea, it partakes of the nature of external parts, and runs into formidable disease, as ulcer, fungus, &c.

The same morbid structures prevailing in the breast, very soon cling to the skin, and break out into all manner of formidable fungous ulcers, or real cancers.

The difference exhibited in the advance of the disease, in these parts so differently situated, and the more rapid progress of the scirrhus of the mamma to the formidable condition of cancer, I attribute principally to the mamma being more exposed in its situation than the ovaries. On this principle I have

acted, and by endeavouring to convert the mamma, as it were, into an internal part, and to guard it from the changes of temperature and the influence of the atmosphere, I have been enabled long to retard the ulceration, and to heal it after it has begun. The manner of dressing is described below.

It is principally owing to the more external position and relations of the uterus, that its affections are more formidable than those of the ovaries; and that the *os tinea* is the seat of the most painful and distressing maladies of that part.

The tubercles of the uterus, and the scirrhusities of the ovaria, being of the same class of diseases with those of the mamma, and the circumstance of position affecting the latter, so as to produce an earlier development,—an important question arises, Are we sufficiently attentive to the condition of the ovaria and uterus, when consulting on the condition of the mamma, and about to decide on the propriety of operation?

Obviously it is not enough to ascertain the condition of the breast, and of the lymphatic glands; the state of the uterus must be inquired into. We should question the patient, and ascertain if there be the irregular hectic; and we must inquire if there be pains of the hips and thighs, and tenderness of the spine, for these are symptoms which attend disease of the uterus. If these symptoms are present, an examination of the uterus should be demanded before operating on the breast.

Local Treatment of the Carcinoma Mammæ.

The late Mr Cline was satisfied with covering the scirrhus breast with the soap-plaster; but it required all the influence of his authority to induce the patient to be contented with any thing so simple.

We all recollect the attempt of Mr Young to cure cancer by compression. The idea was taken up in extraordinary ignorance; yet incidentally there was something not to be despised in the practice; I mean the covering the breast deep under bandages.

At the time of dressing, the breast is to be bathed with a large sponge and salt and water, tepid or agreeably warm. The salt and water strengthens the cuticle, and tends to prevent the skin ulcerating.

Or, if there be tenderness of the surface, make a lotion of extract of conium and warm water, and continue to bathe the breast for some time.

The breast being dried, do not let it be long exposed, but cover it with slips of lint, spread with a cerate composed of soap-plaster, or the emplastrum thuris, with a third part of the extract of conium. Put these slips over and across, covering the breast completely. Take care to leave the nipple uncompressed.

Over this put a piece of oiled silk, gumming it to the skin at the edges;¹ then put on cotton wadding in great quantity, the more the better; a piece of flannel over that; and roll the breast, or support it

without painful pressure by means of a broad bandage and shoulder-straps.

¹ Especially if the smell of the dressing be offensive to the patient or her friends.

Put a turn of the roller round the arm to keep the elbow to the side.

If there be tenderness of the nipple, wash it with borax and spirits and water.

If there be superficial excoriation, as if the tumour were about to break into open ulceration, cover these with gold-beater's leaf.

If the dressing be carefully performed, it should be left three or four days.

Such a mode of dressing goes far to make the breast an *internal part*; it keeps it in a uniform temperature, and preserves it from all influence of the atmosphere.

Let it not be forgotten that, next to protecting the surface, it is necessary to preserve the pectoral muscle below the gland at rest, by confining the arm.

A great advantage of this mode of dressing is, that it prevents the patient fingering and disturbing the parts.

For well founded reasons, I am averse to apply leeches to the *mamma*, especially habitually or regularly. Such application to the hæmorrhoidal vessels is often necessary; but, for the very reasons that they are beneficial there, they are the reverse when applied to the breast.

But it occurs that the breast swells suddenly with

great pain, and then leeches and fomentations are very necessary. Yet, even in this case, the leeches are applied with more advantage between the mamma and arm-pit, than on the prominence of the tumour.

When there is an *open cancerous sore*, a great variety of modes of fomenting, poulticing, and dressing, must be had recourse to.

If there be a deep slough, lint dipped in camphorated oil should be laid in the bottom of the sore, and over it a poultice.

The carrot-poultice will remove the offensive smell. The fermenting poultice is very often preferred by the patient; and when well made is an excellent dressing. A poultice made with the *brown wash** of the hospital is good.

In common cases the best digestive ointment is one part of basilicon ointment to two of Turner's cerate, with a little finely levigated red precipitate. While this is put into the deep sore, the edges must be protected by the ceratum plumbi cum creta.

When the breast is thus dressed, it should be covered with the cotton as before, and gently supported.

The mode of compression as advised by Young was tried in the Middlesex Hospital in several cases. It produced most distressing consequences to those who were far advanced in the disease, and great pain to all.

* *Lotio conii cum opio.* R Extracti conii, ℥iij.
Opium duri contriti, ℥j.
Aquæ ferventis, Oj.
M fiat lotio.

Example of a Common Case, in which the Operation is proper. The Operation minutely described.

Mary Bacon, aged 47. Whitbread's Ward, December 31. 1823.

This woman is sent up from the country with a scirrhus mamma. A tumour, about the size of a walnut, occupies the right breast. It is deep-seated in that part of the mamma which is betwixt the nipple and the axilla.

There is another little tumour or knob, just underneath, and attached to the base of the nipple.

These tumours are to be felt, not seen; for on disclosing the breast, there is neither enlargement, irregularity, nor discoloration visible. The nipple is not erect, nor quite natural; neither is it much drawn in. There are no tubercles on the surrounding skin, nor enlarged glands in the axilla, or above the clavicle. The other breast is natural.

This woman is of a spare habit, and apparently delicate constitution; yet she has enjoyed good health, and has had nineteen children. She has come up to town with the intention of having the operation performed.

The necessity for it is obvious, and there is nothing against it. It is apparently a true carcinoma, in its first stage; and if the operation is to be successful at all, in the case of true scirrhus, that success is promised here.*

* R. Calomel, gr. iv.
Conserv. Rosæ, q. s.
Ft. Pil. h. s. sumend.—et cras mane haust. domest. ℥ij.

Operation—January 2. 1824.—An incision was begun upon the side of the mamma towards the axilla. It was carried a certain way in a straight direction, and then round the areola on the lower side. The incision terminated at the edge of the tumour towards the sternum.

Where this incision began to deviate from the straight line, the second incision commenced, and inclined round the areola, at the upper part, joining the first incision at about two inches from its extremity.

During the operation, the patient entreated that the whole might not be taken away; but to this the operator could not yield, as, for good reasons, the nipple and areola are always included in the part removed. After these external incisions had been made, and the integuments a little dissected back, the tumour at the part next the sternum was separated from the pectoral muscle, lifted up and drawn towards the axilla.

The part next the axilla was separated last. The bleeding vessels were carefully sought for after the operation, and five of them secured. One artery was tied during the operation. The oozing of blood had entirely stopped before the parts were brought together.

Adhesive straps were used; over this dressing and lint, and a soft cushion of tow was placed over all; finally, a broad roller was put round the chest, with a scapulary over the shoulder.

January 3.—Notwithstanding the care which the operator took, that there should be no more hæmorrhage, there is considerable oozing through the

dressings. There is a slight degree of fever, which, however, arises only from what is vulgarly called the stimulus of the knife.

January 5.—The patient was dressed to-day. Considerable adhesion has taken place, and it would have been complete, but for a little blood which has oozed betwixt the lips of the wound. The dressing was made in the same manner as after the operation.

A little fretting of the skin threatens erysipelas.

Capiat Haust. Salin. cum vino Ipecac. ℥ x. ter. die.

January 7.—The cutaneous inflammation was caused only by the irritation of the strapping.

January 9.—The ligatures have come away, and the wound goes on prosperously. The woman is comfortable in her feelings, and happy that the operation has been performed. The tongue is quite clean, and the skin natural,—Dismissed highly satisfied.

Consultation on the propriety of Operating in Carcinoma Mammæ.

At the same time that the surgeons of the hospital had determined on the propriety of operating in the preceding case of Bacon, the following came under consideration.

Sarah Shakestaff, æt. 30. A consultation has been held on this case.

1st, The first thing to be observed is her complexion. She has the cancerous countenance (which must be seen, it cannot be described).

2d, The nipple is drawn into the breast; another unfavourable circumstance.

3d, A solid scirrhus tumour occupies the breast, and the breast is dimpled in the centre by the retracted nipple.

4th, There is a hard tumour, about the size of a walnut, in the axilla; it has been there for two months. The tumour in the breast has existed for at least twelve months.

5th, She says that the pain is of a stinging or darting nature. Catamenia absent for a year past.

The surgeons are of opinion that no operation can be performed in this case. The reasons they assign are, that the filaments, which are thrown out from the centre of the carcinomatous tumour, must have extended their roots too far to be cut out. As to the tumour in the axilla, although it might be taken out without immediate danger, yet the disease must have gone beyond the apparent tumour.

Katherine Ferry, *an out-patient*. She comes for the advice of the surgeons of the hospital. She has a tumour in the breast very obviously carcinomatous. The nipple is retracted, and the skin of the pit around the nipple is inflamed and moist, approaching to actual ulceration. Directed by this circumstance to examine the axilla, a gland is found there considerably enlarged.

These circumstances decide the consultants in advising that the operation should not be performed.

Mr Bell made the following remarks on these three cases being read.

From these cases, it may be inferred that it is only in the early stage of this disease (the true carcinoma), that we dare promise success from the operation.

The practical difficulty is, to find the symptoms sufficiently marked to indicate the true nature of the disease, and yet to have the absence of those appearances which indicate that the filaments have extended too far to be eradicated.

For example, if there has been ulceration of the nipple, it is always attended, or immediately followed, by contamination of the glands of the axilla.

Again, the retraction of the nipple, if it be complete, implies that the filaments (which characterise the section of this kind of tumour), must have stretched beyond the mamma into the integuments; and this may have happened although the skin feels quite soft and pliant.

The circumstance the most decisive against the operation, is the earthy-pale, unhealthy countenance which belongs to an advanced stage of this disease.

CHAPTER XII.

OF THE DISEASES OF THE PARTS IN THE FEMALE PELVIS WHICH REQUIRE THE AID OF THE SURGEON.

It is out of my province to treat of Midwifery, and yet the members of our public boards are inexcusable for rejecting examination on this important branch of practice, since they are established for the health and welfare of the community. In how embarrassing a situation the surgeon must often stand who is ignorant of midwifery,—how many and serious the mistakes into which he must fall. Many a time I have seen the surgeon proceeding to the extirpation of the mamma, without a question as to the woman's constitution, or the capability, on his part, of putting a question on the subject! I have found a surgeon employing rectum bougies for years, on account of an obstruction from displaced uterus! I have been called to puncture an ovarian tumour in the pelvis, and found it to be the projection from distorted spine! I have known a practitioner of note incapable of relieving a woman with the catheter, when the urethra was compressed, and unable to determine whether it was retroversion, prolapsus, or ovarian tumour, that compressed the neck of the bladder. I have never known an operator who was not ready at a moment's notice to perform the Cæsarean section, and yet had never reflected on what depended the danger of the operation, or if there were means of obviating these dangers.

Conceive the danger of a surgeon even performing the common operation of tapping an ovarian dropsy, without knowing the signs of pregnancy.

Sir Charles Clarke says, "I have a patient now who has been taking medicine for the stone. She has a tumour projecting from the anterior part of the neck of the uterus."

As I have often said, practise what department you may, but study the whole; there is infinite danger in attending

exclusively to the practice of medicine, or surgery, or midwifery.

I shall have but a few remarks to make on this neutral ground.

Use of the Female Catheter.

Consider the peculiarities of the female urethra ; short, direct, wide. What, then, should obstruct it?

1. It is obstructed in hysteria. 2. The bladder may have suffered from over-distention. [Turn to vol. i. p. 282.] 3. It may be pressed on by the child's head retained in labour. 4. It may be pressed by the os tinæ in the case of retroversion. 5. The ovary in a state of disease may have fallen upon it. 6. The diseased orifice of the uterus may press upon it. 7. Polypus of the uterus and procidentia may affect it.

In common cases, you have only to manage the introduction with some delicacy. The patient is in bed ; the nurse places a pan or a urinal. You take the catheter as you hold a pen ; the point of the mid-finger is a little beyond the extremity of the instrument. The hand under the clothes ; the finger between the labia. You distinguish the prominence of the clitoris ; and in a line directly under that you feel the slight prominence of the orifice of the urethra, and slipping the end of the catheter off the finger, it enters the urethra. In the woman who has borne children, the mouth of the urethra is lower, and just on the margin of the vagina or os externum.

When the obstruction is from the child's head, or a tumour, &c., you alter the direction of the instrument. After it has entered the canal, you press the handle down

upon the posterior perineum, and direct the point of the catheter upwards on the inside of the os pubis.

In the case of *retroversio*, you would do well to use a flexible male catheter.

This case of *retroversio uteri* was first explained by Dr W. Hunter. You will find cases in the *Medical Observations and Inquiries*. I know it only by dissection. I went with an accoucheur to examine the body of a woman who had died undelivered. On touching the body, I said this was no case of pregnancy! And on opening the abdomen we saw the bladder, and not the uterus, and it extended above the umbilicus. The fundus of the uterus lay in the hollow of the sacrum; the os tinæ distorted the urethra, and pressed it against the os pubis.

You suspect this to be the cause of obstruction when the patient is three months gone with child; for then the uterus is of a size to occupy the pelvis, and extend obliquely across it.

I have found the diseased uterus lying thus across the pelvis, and the fundus adhering to the rectum and sacrum, and the os tinæ pressing on the neck of the bladder.

The orifice of the urethra is subject to a fungous excrescence. It is to be treated with escharotics and strong astringents.

Enlargement of the Nymphæ.

The morbid enlargement of the clitoris or of the nymphæ requires the knife. In removing these, take their structure into consideration. Being vascular, and spongy and excitable, they are subject to bleed after the surgeon has departed, and much blood may be lost before means are found to arrest the blood. Therefore, I would advise that the operation should be performed as recommended in the case of hæmorrhoids, vol. i. p. 262.

Imperforate Vagina.

The nurse will bring you a female infant with the labia adhering. You may be induced to sit down with regular surgical apparatus to divide this unnatural union. On separating the parts for the purpose of a careful dissection, you find the surfaces tearing up! and that you may undo the union with your finger, or with the handle of the knife.

No doubt, if neglected, this may become a firm closing of the vagina.

But the imperforate vagina presents us a very different case. The defect is not discovered till the period of menstruation, and perhaps not then. I operated on a married lady who had lived four years with her husband; Dr Mirriman and Dr Sweatman present.

The usual symptoms accompanying menstruation, without the usual relief—the gradual accumulation in the uterus—and a certain degree of fulness in the lower part of the abdomen—ought, one might imagine, to indicate the imperfection, even in unmarried women. In the case alluded to, there was no such indication of distress, notwithstanding the cavities of the uterus and vagina were greatly distended with the accumulated menstrual discharge.

The closure or septum is just within the vestibulum; it is firm, and resembles in colour the sides of the vulva. Introduce a catheter into the urethra. You perforate with the pointed bistoury, and there rolls out a matter like tar. You enlarge the opening so as to admit the point of the fore-finger; and now, taking hold of the membrane between the finger

and thumb, you are not to be contented with opening the passage, but ought to cut it out in a circle.

The flow continues for many days, and perhaps does not become quite natural till after the period of the next menstruation. It is remarkable that the matter discharged does not become putrescent. It will dry like a cake of glue.

It is proper to use the bougie for some time after the operation.

Be aware that girls of from five to eight years of age are subject to a disease in the external organs of generation—an inflammation of a deep dusky-red colour, attended with foul ulcers, and sometimes sloughing. There is great disturbance of the health accompanying this disease. Mr Lawrence describes the complaint, and states his belief that men have been unjustly accused of abusing mere children, under the impression on the parents' minds that the child must have been infected with venereal disease.!

Procidentia, Prolapsus Uteri.

I have already hinted, that the uterus sinking into the vagina, or reclining, and forming adhesions, will obstruct the rectum, and may be mistaken for stricture there. In disease of the rectum in the female, you will examine also by the vagina.

The uterus falls down in consequence of relaxation of the vagina, and that occasioned by discharges, and consequent weakness. Therefore astringents should be freely used as injection, or introduced with soft sponge (remembering, however, that astringents improperly used may cause inflammation).

As to the employment of *pessaries*, I am against their use. It is inconceivable how offensive the dis-

charge is, induced by the lodgment of a foreign body in the vagina, and even from this cause the use of pessaries must be hurtful.

It is better to invent means of returning the parts within by pressure without; you may make compression with the T bandage, or the apparatus with a spring brought round from behind, as for the support of the prolapsus ani. But we encroach on the business of the accoucheur.

Polypus Uteri.

Before you interfere with this form of disease, you ought to be thoroughly acquainted with the condition and diseases of the uterus, which is a very extensive department.

Consider, 1. The case of procidentia, the uterus sinking through the vagina; 2. The inversion of the uterus; 3. The case of mole or firm coagulum in the cavity of the uterus, —perhaps layers of successive flooding surrounding an abortion; 4. The diseases of the os tinæ and of the glandulæ Nabothi.

The symptoms are not unfrequently mistaken, and the physician may be drugging a patient on account of profuse menstruation, when the cause, beyond the influence of medicine, is a tumour exciting the womb. The shortened interval of menstruation, the more profuse discharge, and of pure blood, is the condition which calls for examination.

You examine with the finger, and with a strong probe furnished with a ball. You take care to distinguish the prolapsed uterus. You feel for the orifice and the distorted lips of the os tinæ. You make sure to distinguish them from the polypus. You go round the tumour, carrying the probe be-

tween it and the sides of the vagina. You try to discover the neck of the polypus, and its place of attachment. You pass your probe beyond it into the cavity of the uterus, and you distinguish the neck of the uterus.

All this precaution is necessary, to prevent you from throwing your noose on the uterus, when you intend to include the polypus only.

The operation is this : Take a stay-lace—twist into it a fine gold wire—with this you are to noose the polypus. There are two instruments to enable you to do this—a fine iron rod, with a firm handle, and the extremity forked, yet so as not to prick or hurt, —the other instrument is like to this in all respects, but at the end there is a ring, and on the handle pins to fix the ligature. These instruments are a little bent, to accommodate them to the convexity of the tumour.

You expand the loop of the cord on the ends of the fore and mid fingers of the left hand ; you insert them behind the polypus ; and with the assistance of the forked instrument you carry the cord round and round the base or neck of the polypus. You next pass the ends of the ligature through the ring of the second instrument, and run it up so as to tighten the loop round the neck of the tumour ; you push up and adjust the loop with the forked instrument ; and finally draw it tight, and fix the ends of the ligature to the handle of the instrument. You let the instrument remain, and may have occasion to tighten the cord next day. ☞ You are careful so to defend the instrument that it shall not, by some unpremeditated motion of the patient, be impelled upward to

the injury of the uterus. Inject and wash the vagina until the polypus drops off.

Puncturing the Ovarium from the Vagina.

Dr Mirriman has given cases of obstruction to delivery, by tumours of the ovary sinking into the pelvis.

You will be informed by the competent authorities on this head, that obstructions which appear insurmountable to the delivery of the child, do nevertheless yield and disappear in the progress of labour in a very surprising manner. Nature is not easily balked in her operations. This you must think of when employed to perform operations to admit of delivery.

I have hinted that I was called to puncture the ovary when there was no such tumour, notwithstanding three of the principal accoucheurs in London were in consultation. On examining for the purpose, I was confounded to find no *tumour*. On returning to the consultants, I declared there was no such impediment. "What," said our senior consultant, "not feel it; why it is as large as a Norfolk dumplin." "What, gentlemen," I answered, "is it possible that you have not recognised the prominence of the sacrum in a pelvis distorted in a remarkable degree?" They went and found it so. You perceive that the surgeon must sometimes exercise his judgment as well as his dexterity. I had here the first authority for thrusting the trochar against the bone!

On another occasion I was carried down to Berkshire to puncture the ovary, which, it was supposed, had descended into the pelvis. The lady was in the last month of pregnancy. I found on the side

of the vagina a tense tumour; but feeling also fluctuation, I conceived the possibility of it being matter: and on examining the patient, I found it tense and full when she was erect, soft and almost disappearing when she reclined. This directed my attention to the spine, and, in short, I found the case to be a lumbar abscess. Enough, then, to put you on your guard in examining tumours in the pelvis.

One thing more; these tumours of the ovaria are often too solid with fat and hair to lead us to expect much relief by puncture through the vagina.

Extirpation of the Diseased Os Tincæ.

In the present day the uterus has been extirpated, and I fear this operation will be repeated. I say so, because I conceive the operation is not authorized on any just principle.

When I have seen the extirpated parts, they exhibited no just reason for the operation. The formidable disease of the body of the uterus does not admit of the operation, and, indeed, in every case the danger is extreme.

Excrescences from the orifice are the subject of operation, with more reason; for though, if the disease be malignant, it is impossible to make a cure by cutting off an open cancerous and fungous tumour, still symptoms may be alleviated by excision of a part, and tumours not malignant may be removed.

The operation is an unseemly and a cruel one. The tumour is seized by the hooked forceps, and drawn down, and the diseased part cut off; a consi-

derable hæmorrhage should be permitted. It will be stopt by styptics and the compress in the vagina.

On the whole, I do not recommend these operations. You cannot extirpate a cancer of the uterus, as some foreign surgeons pretend to have many times done.

Mr Lawrence has most sensibly expressed himself on this subject.

Some Observations on the Cæsarean Section.

There are two cases in which this formidable operation may be performed; 1. When the mother at the full period of pregnancy dies suddenly; 2. Where the state of the distorted pelvis gives no hope of saving the mother by the sacrifice of the child.

When the mother is dead, and a movement to the last indicates life in the child, it might be imagined that it signified little how the operation is done. But it is obvious that it will be more readily submitted to by friends, and performed by the surgeon, if the mode of it does not necessarily imply the destruction of the mother.

When I have assisted in this operation it was performed thus: My position was to grasp the abdomen, to prevent the intestines protruding, as the tumour of the uterus should diminish. The operator (having taken care that the bladder was empty) made an incision in front, as close to the pubes as possible, for the uterus hung over; the incision included the margin of the rectus muscle. This was

an unnecessary precaution, but its object was to have a fleshy and broad margin for the incision. The abdominal walls being divided, the surface of the uterus came into view. It was touched with the knife, on which, it flew open, shewed no sharp cut, but a circular opening, the fibres retracting in all directions. The incision of the uterus being completed, the operator insinuated his hand, burst the membrane, and seized the child's feet, and, somewhat perhaps too rapidly, delivered the child. The placenta had been attached low, and it rolled out as soon as the child was delivered.

My occupation was now an arduous one; for the woman immediately commenced vomiting violently, from the sympathy between the uterus and stomach, so that I retained the intestines with great difficulty, until the suture was completed. She died of hæmorrhage from the uterus into the abdomen. The child survived.

I can have no hesitation in saying that the necessity for performing this operation may occur. It has for a long time been decided that, of the two lives, that of the mother and the child, the offspring is to be sacrificed to save the mother, in those dreadful cases where both cannot be saved.

But there occurs a case in which the mother cannot be saved by the operation of embryo-ulcia. It is needless to contest the question of the degree of distortion which absolutely prevents delivery. In the instance above alluded to, the distortion was such that the child's head did not present at all to the brim of the pelvis, nor could any part of the child

be felt per vaginam ! nor was there room to pass an instrument and the finger at the same time ! *

On such a case recurring, time and opportunity being given for the performance of the operation, I would recommend the following precautions :

1. That the incision through the abdominal walls should be made in a direction from the crest of the pubes obliquely outwards. The epigastric artery would require to be tied.

2. Press up the peritoneum,—a matter not difficult in the pregnant state of the uterus,—and reach the vagina or uterus under the peritoneum.

3. Getting at the vagina, or certainly the lowest part of the uterus, make a small incision,—introduce the finger,—dilate slowly : imitate in this the natural labour ; there would be neither pain nor danger by delay.

4. Break the membranes, and if the action of the uterus should be as strong as I have seen it in the last case, permit the head to advance ; if not, seize and deliver by the feet, as in the operation of turning.

Would not such a procedure avoid the breach of the peritoneum,—would it not avoid the fatal hæmorrhage which is consequent on the incision into the body of the uterus ? Would it not give a better chance of recovery than by an incision into the belly of the woman ?

* Let it be remembered, that in a remarkable distortion from mollities ossium, the operator deliberating on what could be done, was surprised to find the head of the child descending ! It appears that the bones had become softened in a degree beyond any thing I have seen or could have believed to be consistent with life. The distorted pelvis yielded to the force of the labour pains.

CHAPTER XIII.

OF SYPHILIS.*

Is there any experienced senior of the profession, who, having a son of eighteen or twenty, and that son having a chancre, that would treat him without mercury? No! there is not such an unnatural person.

This is our text, for to this the practical question should be brought.

As to the history of this disease, it is curious, but not essential to a right practice. We may observe, that the Greek and Arabian physicians were accurate observers and good historians. Could they have failed to notice a disease characterized as this is,—death through stages so horrible?

In the genitals, chancrous ulcers and *verruca*,—buboes in the groin,—wide-spreading deep sores,—upon the skin, yellow and livid blotches,—pyramidal scabs, and under them corroding ulcers,—pustules and ulcerated tubercles around the temples and forehead,—the bones of the palate lost,—the lips, eyelids, and nose swollen, distorted, and ulcerated,—the hair fallen,—the human features and the human voice lost,—and the unfortunate victim racked

* For the name read the curious Latin poem of Jerome Fracastorius.

with pains in the bones, succeeded by nodes and exostosis. Could a disease so horrid be overlooked?

About the close of the fifteenth century, the disease became universal. In a single lifetime there appeared a hundred books upon this disease, and not an allusion to it before. It is of no consequence whether it was brought from America, or broke out in the dissolute camps of the French and Italian wars. The question must ever remain undecided, how it did arise. Was it from the broken skin coming in contact with a morbid secretion of the opposite sex; which secretion was not of the same nature with the disease it produced: that is to say, not syphilitic? or had it a wider origin,—did it proceed from, and does it ever attend a demoralized people indulging in promiscuous intercourse? This question might be of some interest as touching the notion of the disease dying out, and of there being many diseases of venereal origin.

On this latter question it must be noticed, that, in the earliest author on this disease, sixteen kinds were enumerated. Mr Abernethy should have gone back to this, when he was describing a new species of the disease. Are there in reality new diseases, or are the appearances which have given rise to the opinion to be attributed to other causes? I must state to you the sources of so many adverse opinions.

1. Syphilis differs from all other diseases in this, that the milder the symptoms are, they are the more difficult of cure. 2. Again, you cure the symptoms prevailing for the time, without curing the disease. 3. There are stages, or a succession of symptoms. You combat the first, and the second, third, or

fourth rise in succession. The specific for the disease is itself a poison, and gives rise to disease. 5. Both the disease syphilis, and the remedy mercury, in certain constitutions, and especially in scrofula, have formidable consequences. Then the constitution of the individual, the season and the country, give rise to new characters of the disease.

I might enumerate other peculiarities, the sources of a thousand errors and misconceptions, and all principally owing to the length of time the disease will lie dormant or drag on. A disease so chronic is easily influenced, though not cured. Philosophers will calculate the orbit of a comet from observation of a portion of its course. But the course of this disease is subject to too many disturbing causes, besides that our practitioner is not a philosopher. It is far easier for him to assert that he has got an extraordinary—an unique—a new disease to deal with, than to be trammelled with the knowledge of the old.

We seldom see a mismanaged case in which the patient has not been poisoned with mercury; from this, various erroneous opinions spring. But in the hour I am writing, I see the disease in all its purity! A gentleman presents himself ill in many ways! "Now, come let us be explicit and save time; have you any idea of venereal disease hanging about you?" "None." "You have taken no mercury?" "None." But he is quite out of health—wasted—pale—his hair falling off; he is sleepless with pain in his bones, and on the outer spine of the humerus there is a very tender and protuberant ridge,—his tibia is tender, the clavicle rough. Now, my opinion is, that

this gentleman is thoroughly poxed, and nothing is wanting but neglect to render him an object, such as we occasionally see coming into an hospital; or such as I have described from the early authors in the first part of this chapter.

And the reason that we do not see those objects more frequently, is because the cure is so easy. A quantity of mercury is given, and given improperly, and then indeed we see a new disease.

But the principal cause of difference in cases, is owing to the constitution of individuals, joined with the peculiarly slow progress of the disease. We shall find arguments as we proceed.

The primary ulcer (chancre) is the same to-day with that described by Mr Hunter,—the same with that described three hundred years ago. (What is the conclusion?)

When on the glans, it is thus: the first stage, that of pimple or pustule, is generally passed unnoticed; the alarm is from an itching; a small ulcer is visible; its surface has the colour and appearance of a slough, a cineritious colour, rather more yellow; by-and-by the edge is raised and hard; already it may, from this circumstance, be felt through the prepuce, especially if on the corona.*

In this condition, the sore will remain sometimes long stationary, “as if waiting for the consent of the constitution.” On the contrary, the surfaces may

* Mr Hunter has much praise from the critics for his description of chancre. Compare it with one of the original writers, *Vigo*:—Semper fuit cum pustulis parvis, interdum lividi coloris, aliquando nigri, nonnunquam subalbidi, cum callositate eas circumdante. See Howard. So *Marcellus Cumanus*.

inflammation rapidly, with increased discharge over the glans, and possibly phymosis.

When the chancre forms on the prepuce, there is inflammation earlier. The thickening is more distinct, for on taking hold of the foreskin between the finger and thumb, you will feel a hardness like a pea.

If the sore has formed on the outside of the prepuce; it will be covered with a scab.

☞ See that you distinguish a tear of the root of the frenum; it very much resembles a chancre in an early stage. When the chancre is really here, it produces violent inflammation. Remember, too, that the glans and prepuce are peculiarly exposed to excoriation and ulcer not venereal, and that, if you give mercury for these, you enter a labyrinth.

Accidents.—I wish to have a term that shall mark the varieties incidentally produced, not necessarily attending the primary ulcer.

The infection received from a subject in whom the disease is mild, hardly indeed attended with distress, will appear with unusual violence of symptoms in the newly infected. There may be much inflammation, pain, and irritation. There may be sloughing, bleeding, or mortification. Some of these peculiarities may proceed from the part which is the seat of the sore; more from the condition of the health.

For example, there is a *livid irritable chancre*, ragged on the edge, and in progress resembling phagedena, very irritable, and therefore attended with much swelling of the integument. This implies no new disease. You look to the individual: consider the season: you may find other sores or wounds par-

taking of the same disposition. (Turn to p. 9, Introduction.)

Mortification is an alarming occurrence ; perhaps, in a few days, the foreskin and the whole member will be swoln and of a dark red colour ; mortification follows, and a great part of the penis falls off in slough. This is not a bad *form* of the disease ; it is accidental. You look for the causes in the individual ; perhaps a soldier in cantonments. In that case, you consider the country, the exposure, the season, the food, the wine, &c.

In the end of summer 1818, I gave a clinical lecture on five cases. Two men, who had slightly hurt their hands (one of those had only scratched his knuckle), were lying with their arms mortified. One man had lost his penis by mortification ; another had a black spot on the prepuce, which threatened to go the same way ; and one had lost both penis and scrotum, and was dying from the spreading of mortification extending to the belly. The conclusion was not difficult to draw : the season and the state of the house was the immediate cause of the mortification in all of them.

Phagedenic ulcer is equally an accident, and may proceed from a chancre, but also from a common ulcer, or a wound of the prepuce.

We see at least one fertile source of misconception, that the primary sore seems to vary, and to present the character of new diseases. We perceive, also, that the constitution exercises a most remarkable influence upon the sore ; and we draw the con-

clusion, that it is of the utmost consequence to keep the patient in a favourable condition for the healing of a sore, and at rest.

Bubo.—An uneasiness and pain in walking is felt; then a swelling, and generally of one gland; the induration swells and obscures the gland. The skin reddens; it is a florid red: suppuration is perceptible in the centre. When the abscess gives way, the matter will appear in unusual quantity for the size of the swelling. The edge of the ulcer wastes, and assumes a venereal character; the matter yellow, the bottom sloughy, the edge hard.

But is it a venereal ulcer? Consider what other sources there are of a glandular swelling. Is it in the glands which belong to the penis? Is there a sore on the glans? Is there gonorrhœa? Are there piles or irritation at the anus? Has there been any excoriation on the thigh? Is the swelling in the lower order of glands? Are there several glands enlarged? Has he been using mercurial friction, and has he irritated the roots of the hairs of the thigh into pimples? &c. The bubo is equally subject to accidents as the primary sore; to irritation and excess of action; to rapid ulceration, phagedena, and sloughing. To which conditions the venereal virus is only the exciting cause.

Secondary Symptoms.—This means constitutional disorder, arising out of the local affection. It is the prevailing opinion that matter is absorbed. It may be that irritation and peculiar action are the means by which disease is propagated from the part to the general system.

The disease is ushered in by some general symptoms. If you ask your patient if he has considered himself in good health of late, he will answer in the negative. The pulse is quick; the skin hot and dry; he has palpitations or faintness, pains, and, as it were, a weight on his shoulders; and these symptoms are relieved by a sore throat or eruption.

The constitutional symptoms will appear in about two months, though they may be delayed by climate, season, temperament, or regimen; above all, they may be rendered both late and irregular by improper exhibition of mercury. On the other hand, the cold and wet of winter will accelerate the coming on of symptoms. Many a one passes the warm months in ease, to have the disease shew itself on the coming on of cold, irregular weather. The cold bath will develope the venereal sore throat.

An opinion prevailed that, if the patient continued well for three months, he was safe. I wish I could subscribe to this opinion, but it is not consistent with experience; were it really so, the whole matter would become exceedingly simple.

Sore Throat.—The patient's attention is drawn by a prickling sensation in the throat on swallowing. The ulcer is deep in the amygdalæ, or in the soft palate, the sides of the arches. It is excavated and sloughy, or, as you would say, foul. The matter is greenish, the edge abrupt. There is a dark redness on the palate around. There is little tumefaction. You cannot wipe away the secretion.

¶ 1. There are ulcers of the tonsils in delicate constitutions, and lax habit. 2. See that you do not mistake viscid mucus sticking in the follicles of the tonsils for ulcer and sloughs. 3. There is a mercurial ulcer, but salivation

- and fœtor of the breath will warn you against mistake. 4. In indolent tumefaction of the tonsils, with thickness of speech, there is sometimes coagulable lymph thrown out upon their surfaces. You will know this by the greater degree of swelling, and the absence of the excavated ulcer. 5. The throat is subject to phagedenic ulceration.

Cutaneous Affections.—Eruptions sometimes precede, often follow, sore throat. The skin and fauces are of the same class of parts.

The general distress is greatest preceding cutaneous eruption; headach, pains about the shoulders, dejection and languor.

The skin becomes mottled; this subsides, and there are small spots of the cuticle elevated; these are abraded, and there appear copper-coloured spots, flat, the size of a split pea. They are circumscribed and distinct, though sometimes they occur in patches. They present on the forehead, roots of the hair, the breast, and the inside of the arm.

The pustular venereal eruptions are more equivocal.

At an after period, the glands of the face, of the cheek, *alæ nasi*, and upper lip, ulcerate. There comes a pimple, from which an ichor is pressed; it becomes a sore; the edges are high, within is a greenish slough, which cannot be cleaned away with lint. The cavities of the nose are stuffed: there come away pellets of hardened secretion; the smell is offensive; blood is discharged on the handkerchief.

The patient has now more evidently suffered in health; his complexion is sallow; if he was florid the colour is gone; his pulse is quick; he has shivering and wandering pains; his ankles swell.

Now, the affection of the skin is pustular, and crusts of all sizes form upon the head and face; and there are swellings of the periosteum over the most exposed bones. Nodes appear; the pains are aggravated at night. If still unchecked, a glairy or coagulable fluid forms between the bone and periosteum, and the bone becomes inflamed and carious. The pain now rises to delirium.

We have followed the course of the disease until it has taken full possession of the system: how slight the beginning—how strange and irregular its course—and how unhappy the consequences—distress and shame.

It is many years since I conversed with Mr John Pearson on this disease. We were in consultation on a gentleman on whom the attention of the country was then fixed. I could not control him; high duties, and a relish for society, called him abroad, while a sore was eating into the glans. Mr Pearson said: "You know my experience in this disease; you are now in a condition in which you can be cured and effectually and entirely cured. But by your manner of life our treatment will be inefficient: the disease will slumber in you. Symptoms will appear from time to time, and these, like this, will be removed; but at length you will fall into a condition, over the symptoms of which we shall have no control."

We seldom see a gentleman exhibiting the effects of the last stage of this disease, and for very obvious reasons. Successive courses of mercury, ill conducted, exposure, and an irregular life, bring him to an enfeebled condition; and he has inflammation of lungs and consumption, or diseased intestines, and is wasted by diarrhœa.

Such being the enemy we have to encounter, let us see what weapons we are to use.

The Treatment of Syphilis.

There are startling opinions rife amongst us. I lean on Hunter, Howard, Pearson, Cline, and Cooper. I believe Mr Abernethy was wrong in the matter of pseudo-syphilis, and that there is but one disease produced by impure connection, arising in a sore, propagated by bubo, going on to sore throat, cutaneous foulness, and disease of bones.

I believe Mr Abernethy was wrong in other particulars; and from the tenor of my lectures, you know the respect I entertain for him. He believed that the true venereal disease was necessarily progressive, and that a chancre did not heal; and that the manageable symptoms belonged to a new disease. But all the symptoms of syphilis may be palliated—nay, the *symptom* cured, and yet the system remain contaminated. His pupil, Mr Lawrence, entertains just ideas on the subject.

Mercury.—Let us examine the edge of that weapon of defence. We will find it the most dangerous to wield that ever was put into the hands of a tyro.* A certain number of dozens of pills; a certain weight of mercurial ointment is used, and that is the whole rule of many practitioners. Mark, then, I beg, the poisonous effects of mercury; and that it induces disease. 1. That, by long-continued courses, it will

* There stands a structure on a rising hill,
Where tyros take their freedom out to kill.

GARTH.

debilitate and produce scrofula. 2. That, falling suddenly on the mouth, it will produce ulcer and sloughing. 3. That, falling on the bowels, it will occasion violent purging. 4. That, acting on the skin, the surface will become hot and itchy, exhibit papulæ with a suffused redness (mercurial erythema). 5. That its influence on the system will be marked by anxiety in the præcordia ; a small intermitting pulse, pale contracted features, languors, shivering, difficult breathing, and sudden death !

But use it with discretion and skill, and instead of these formidable effects, it proves the only cure of a multitude of evils,—a relief to pains which no opiates will assuage,—fills up and closes the deep ulcers, and restores a wretch otherwise without hope, and an outcast from society.

Before you put your patient on a course of mercury, take especial care that the case is made out, and that there is no doubt of the nature of the disease. No sooner have you commenced the course, than all distinguishing symptoms are taken away. No man, however experienced, can assist you with advice as to the propriety of continuing or interrupting the course.

You ought to inform your patient that his distress and pains will disappear, but that he must suffer to be again ill—ill from another cause, before he is safe : for, unless previously informed, patients will be restive, and take liberties as soon as they feel themselves well, which they will do perhaps within the first fortnight.

It is not the quantity of mercury taken by which

you have to estimate your patient's safety, but the effect as counteracting the disease.

Remember that there are some constitutions so susceptible of the influence of mercury, that the most violent effects will be produced by a very small quantity.

Do not count on these violent effects being remedies for the disease; the action is too transitory to affect the disease, which we have characterized justly as very slow in its progress.

The disease of soft parts will be corrected more rapidly than disease of the bone. It has taken long to affect the bone,—it will take long before the antidote influences the morbid action in the bone.

Disease of the skin, or of the membrane of the throat, is easily influenced; not so the venereal inflammation of a bone.

In the old and confirmed pox, there is great difficulty in exhibiting a full course of mercury. The latent disease, as Mr Hunter said, it is difficult to dislodge. Mercury does not destroy the latent “disposition,” which was what Mr Pearson meant.

Another difficulty meets us when the treatment by mercury is prolonged. It is apt to produce a state peculiar to itself, and yet imitative of the symptoms of the original disease. This is the reason why we must often conjoin other remedies,—as sarsaparilla with a diminished dose of mercury, or the diet drink with rich syrup, and having to sustain the strength, whilst we continue the mercury in alterative doses only.*

* $\mathfrak{z}\text{i}$ of the acid. nitric. dilut to lb. i. of infusion of lemon peel sweetened.

Mercury will sometimes not act, and you join the nitric acid to the plan of cure, or have recourse to some other preparation of the metal, as the oxymuriate in solution.

℞ Hydrarg. Oxymur. gr. i.
 Ammon. Muriat. gr. v.
 Aquæ distillatæ, ʒi. Fiat solutio.

Let him have a tea-spoonful in decoction of sarsaparilla.

There is another peculiarity in the mercury, or rather in the constitution. It will not at all times and in all stages produce its expected effect. Your patient shall have the most unequivocal symptoms of syphilis, yet mercury will make them worse. You must have recourse to other means,—syrops, decoctions of sarsaparilla, nitric acid. You must send him to the country, and prescribe a milk diet; and when a certain time has elapsed, and other symptoms have appeared, the remedy which the constitution rejected will have the most beneficial influence, and a cure be obtained.

You inquire what is to be done when the mercury acts too powerfully and irregularly? You employ purgatives—you expose him to a dry air—you use for the mouth a wash of lemon juice, and laudanum and rose water—you mop the ulcerated cheeks with a solution of the argentum nitratum. When the action of mercury falls on the bowels, you use the chalk mixture, catechu and opium, or if of a more threatening and debilitating kind, this:

℞. Argent. Nitrat. gr. xii.
 Opii, gr. vi.
 Confect. Rosæ Canin. quod satis sit.
 Misce—Fiant pil. xii. Capiat unam bis vel ter quotidie.

And when it acts as a poison, inducing anxiety in the præcordia, and an intermitting pulse, beginning with languor, and cold shivering, and difficult respiration, expose the patient to a dry cold air, and give a mixture with volatile alkali; and take care that in this condition he be not permitted to faint, which may be fatal. He is to be put on a course of bark and acids.

Of the Cure of Chancre.—It is a matter proved, that the primary sore will, in certain circumstances, and by treatment without mercury, heal. But it is as certain that, so treated, a sore throat will follow. Formerly they subdued the system too far; afterwards they were too remiss in this respect, and have trusted altogether to mercury. You do not purge him, and stew him in hot-baths to reduce his strength, but you insist on confinement, a subdued diet, rest, and the antiphlogistic treatment; and with this begin to give the patient a mercurial pill night and morning, then two pills at night and one in the morning; or you order ℥i. of the mercurial ointment to be rubbed in.

You are to continue this treatment until the chancre is healed;—certainly until the peculiar characters of chancre have disappeared.

Do not use caustic nor escarotic, but soothing and anodyne applications to the sore. If there be excess of action and irritation, it has nothing to do with the disease, and it is to be treated as arising from an accidental cause, and to be subdued by the means obviously indicated. I am inclined to believe that much of “the new opinions,” much misconception and bad practice, has arisen from this. The chancre

in an irritable constitution, or, excited by improper applications, is attended with inflammation, tumefaction, perhaps phymosis; and the practitioner, mistaking these for the symptoms of a violent or malignant form of the disease, pours in a destructive quantity of mercury, instead of having recourse to the *adjuvantia*, and limiting the mercury even on account of the violence of symptoms. Having once entertained this error, the next is the framing of an opinion that syphilis may be cured without the exhibition of mercury at all, seeing that these symptoms may be removed without it.

We have our best principles from Mr Hunter; yet I must caution you against taking his work as a guide in practice. "I have," says he, "dissected a chancre out, and the sore has healed up without any other treatment than common dressing." This is very seducing language. Who would not rather have the sore cut out with the lancet, than suffer the confinement and privation necessary to the cure? But no one thinks of such a proceeding, and the objection to it is the same with that to the application of caustic to the sore.

Mr Hunter also advises the sore to be dressed with mercurial ointment; mercury rubbed down with conserve—mercury with warm balsam—solution of blue vitriol—verdigris—calomel, &c. Decidedly this is bad practice. These irritating applications produce hardness. Mercury is given to reduce this hardness, on the supposition that it is venereal, and so your difficulties commence.

On the contrary, we must soothe the part, wash with a solution of white poppies, use as an ointment

the ceratum spermaceti, with the aqua lithargyri acetata, and aqueous solution of opium.

When mercury has had its influence—when a milky whiteness appears on the inside of the cheek, and the cheeks take the impression of the teeth, and the gums are red, with a brassy taste in the mouth—and when, notwithstanding this, the sore is stationary, I would allow you to touch with Bate's lotion.

You must avoid using the knife on the prepuce, when your patient is under the influence of mercury.

Continue the remedy eight days after the chancre has healed.

Treatment of Bubo.—The swelling of the gland is not considered as a constitutional symptom ; yet it implies the necessity of a longer, fuller course of mercury, than the primary sore. If I say six weeks, I would rather that you were guided by the swelling and the surrounding hardness having disappeared.

You will remember the other sources of an inflamed gland ; you will again notice the effect of motion and friction in keeping up a sore in the groin, and you will now perceive the danger into which the practitioner may run, of mistaking the cause of the continuance of the swelling, and therefore of unnecessarily loading the system with mercury.

In all the stages of the disease, you have this additional reason for subduing inordinate action,—that mercury will not have its effect during violent inflammation. It is the same law which is so unfortunate in tropical diseases ; during the violence of vascular action, the mercury will not act.

It is in this manner that we explain the effect of leeching, whether in the case of swelling in the groin or swelling on the tibia!

If the bubo be in a state of suppuration when you first visit your patient, you do not on that account, as some have advised, defer using mercury. It may not prevent the bursting of the abscess, but it will tend greatly to diminish its extent and the discharge.

If a bubo be hard and indolent, there is no reason, while you pursue the mercurial course, why you should not also stimulate with rubefacients, or cover the swelling with stimulating plaster. If the swelling be actually in a state of suppuration, a blister will sometimes cause absorption.

The employment of the lancet is to be avoided.

Dress the open bubo with a mild ointment and a poultice.

When it becomes indolent, and the condensed and protuberant gland is covered with loose skin, other means may be had recourse to; or when fungous and projecting, caustic, sharp dressing, and compression must be employed. There is no danger of mistaking the effects of such means of cure for the symptoms of the original disease.


If such a sore, after yielding to the influence of mercury, should suddenly open and alter its condition, and spread rapidly, mercury is not the cure, and should not be pushed. Nor ought you to forget that a mercurial phagedena is the worst disease of all.

I have often repeated to you, after Mr Hunter, that mercury will produce scrofula. What then

more likely to occur, than that, after the specific action of syphilis is subdued, through the influence of mercury, that a scrofulous diathesis should supervene! and that you should have a scrofulous gland rather than a bubo to treat in the long run.

Venereal Sore-Throat.—If, winter coming on, you should find your patient with a venereal sore-throat, —if cold and wet does in him produce a venereal inflammation, it is the less surprising that the remedies for a common sore throat should have an influence upon the true syphilitic soar throat. There is abundant evidence that it has. The evidence is also cumulative that you ought, in conjunction with the mercury, to take the common means of subduing an inflammation in these parts.

Do not be satisfied, when there is a deep ulcer in the palate, with less than a course of mercury properly conducted for six or eight weeks.

Need I here remind you, that mercury will produce ulcer, and that, if your patient has been taking mercury, you must be on your guard against increasing or even pursuing it. The swelling of the gums, the disposition to salivation, and the fœtor of the breath will inform you; and if these are present with a deep sore, you must change your remedies. Gargle with a wash of the muriatic acid; leave off all preparations of mercury, and give bark, wine, and opium. Remember that in scrofulous persons there is left a disposition to ulceration in the throat, and to superficial inflammation, and excoriation, which will continue for years.  The inflammation will be more of a raised efflorescence than the deep ulcer

of syphilis. You will not treat such a case with mercury.

The ulcer being such as we have described, and going on rapidly and with a venereal character, your anxiety will lead you to employ some direct means of stopping the ravages of the ulcer. With this view, you use as a gargle the oxymuriate, or lay the grey powder mixed with honey into the chasm.* In desperate cases you may fumigate by cinnabar on a hot iron.

With regard to the *condition of the skin*.—Whilst mercury is the cure of the disease, take the other means which offer themselves; *e. g.* the warm-bath—the compound ipecacuanha powder—or opium at night, especially when the skin is dry—or order a draught with morphia, and the antimonial wine.

You will find it difficult to say when the eruptions have disappeared; the spots will retain their colour a long time after they have ceased to indicate disease. It will be sufficient that their lively and peculiar colour has disappeared, and that no elevation of the cuticle remains.

You may wash the fungus that sprouts from under the scabs with a solution of copper, or of the nitrate of silver, and use the red precipitate ointment.

The swellings which remain at the end will require stimulating liniments, or the junction of iodine with the mercurial ointment.

* R_x. Hydrarg. oxymurat. gr. iv.

Solve in spirit. rectific. ℥ii.

Decoct. Cinchonæ, ℥vi.

Mel. Rosæ,

Tinct. Myrrhæ, ā ā ℥ii et ft. gargarisma.

The Pulv. Hydrarg. cum creta mixed with honey may be laid with a hair-pencil into the ulcer.

The tincture of iodine has a beneficial influence after the mercurial course, or when there are reasons for pursuing it no further.

An abscess or a carious bone must be discharged by incision, and the bone taken away, if loose. But no advantage is gained by violence. The linimentum æruginis, and Bates's camphorated lotion, are common dressings.

☞ You will not continue your mercury all the time the bone is carious. After the disease has terminated, time must be given for exfoliation.

Again, in the exposed state of the bone of the nose, the dead bone will be felt, and the offensive discharge continue long after the syphilitic action has terminated. It is among the hundred errors committed in the treatment of this disease, that the remedy is continued so long as the offensive discharge continues; and it will never discontinue while the mercury is given!

To the swellings on the bones you use the camphorated mercurial ointment with the Ung. Hydriodatis Potassæ.

By the long confinement and the course of mercury, your patient is like a hot-house plant, which a breeze may nip. The country and a milk diet, where it is possible, should be recommended.

AMPUTATION OF THE PENIS.

This is a subject which should have been brought into the end of the first volume ; but from what I have to say upon it, it signifies little in what arrangement it is taken. .

It has been my fortune to see this member amputated, when it ought not : also when it was of no avail to stop the course of disease.

When to phymosis there is added a foul and acrid discharge under the prepuce, a crop of warts is produced. The foreskin being narrow, and the matter confined, the prepuce ulcerates at the back part ; the glans projects through the gap, and the foreskin is turned off to one side. The glans being covered with ugly projecting warts, the whole mass appears in the form of the most malignant disease.

But if the prepuce be removed, and the warts properly treated, there being no actual malignant disease in the case, the penis assumes its natural appearance.

But I am bound to state, that the patient having submitted to amputation, the part has been handed to me as a specimen of cancer of the penis, when, on narrow examination, it was exactly what I have here described.

The formidable carcinoma, tending to open cancer of the penis, begins in the glands of the prepuce ; and irregular tubercles being felt in the prepuce, I would have no hesitation in recommending the removal of the whole integument.

But when the disease has taken hold of the glans penis—when the hard irregular integument projects tuberculated, everted, and curled, with a deep cancerous ulceration of the glans—I much fear it will hap-

pen as (I have always seen it) that the amputation will not be successful.

At all events, you examine the glands of the groin, and you feel the glands on the inside of Poupart's ligament. You consider the countenance before you determine on the operation. What you have to dread is the propagation of the disease to the glands of the groin. The tumour takes place some weeks after the operation. It ulcerates, eats deep, even to the arteries of the groin; or a string of glands indurated on the psoas muscle point out the further progress of the disease; and in the mean time, the patient, with a cadaverous countenance, is exhausted, and dies. Nevertheless, I shall describe what takes place in the operation.

The assistant takes the penis between his fingers and thumb, to be as a tournequet. If he does not hold firmly, this will happen:—when the part is cut off, the corpus cavernosum escapes his hold, and contracts within the integuments of the scrotum. The surface bleeds very freely out of the bag of the integuments, and the operator is in much difficulty.

In this amputation, there is no necessity to save integument; the diseased part is cut off with a single motion of the knife.

If the assistant has held the stump properly, the bleeding surface is presented to the operator, and he takes up the vessels. There will be two arteries on the dorsum of the penis; two arteries in the corpus cavernosum, close to the septum; and there will probably be arteries in the integument, if there has been much disease and tumour of the prepuce.

But unless the surgeon thinks of these arteries

anatomically, he will find himself engaged putting ligatures on the cells from which the blood continues to flow. When he has taken up the proper arteries, he must trust to compression for the rest.

A tube may be put into the urethra, and the remaining part of the penis compressed by the dressings.

After this operation the extremity of the urethra is apt to contract, and it will require the occasional introduction of a bougie to keep it open.

ADDITIONAL NOTE

To p. 49, Vol. i.

BURNS, EFFECTS OF RAPID CHANGE OF
TEMPERATURE, &c.

Whilst there is life and reaction a sedative is an indirect stimulus. The alterations of temperature are stimulants, whether the change be to heat or cold. For whilst the body has the inherent property of preserving a uniform condition of heat—of preserving its temperature during all the vicissitudes around it—a change of vascular action is a consequence of the alteration of temperature. If there be increase of heat, there is increase of circulation and transpiration; if there be diminution of heat, there is increase of action without evaporation, and heat is accumulated.

Admitting this, we perceive what a sudden change of heat must produce; that the heat of the room, and of the fire over which we indulge, will have severe, nay even fatal, effects on a person dragged from a snow-storm.

On the contrary, give the powers of the body time to do their office of accommodation, and a man will stand with impunity the heat of a furnace which will roast an egg. The experiments of Sir Charles Blagden, Dr Fordyce, and others, have been more than confirmed by the workmen of Sir Francis Chantrey.

There is, however, a certain range of temperature,

within which the healthy functions of the body are performed, varying with habits, and certainly varying in different animals, (in the human body the temperature is 98° Fahr.; 62° will be agreeable in the sick-chamber).

In extreme cold, the skin becomes pale, the surface rough (*cutis anserina*)—the blood impeded in the cutaneous vessels—the circulation languid—the powers of life fall low, and the part is *frost-bitten*. If it be not a partial influence, drowsiness, and an indisposition to exertion, follows; and if the person be permitted to sleep, he does not recover to sense and motion, but dies. The frozen soldier staggers on the march like a drunkard, and falls with all the powers of life exhausted.

The practical question is divided into, 1. What should be done when the whole body is torpid? 2. What should be done with a frozen part? In regard to the first, let there be no further expenditure of the animal heat. Stimulate to the production of natural heat by friction. Let the surrounding temperature be only a few degrees above freezing. But the covering the body in snow, and plunging it in iced water, seems admissible on no principle that I can perceive. 2d, The friction with snow, in the case of partial defect of temperature, is another thing altogether, for you have a power to invigorate. The friction brings activity, and the snow prevents the too rapid influence of heat, which would be the effect of friction with the hand or with warm flannel.

The whole principle, then, is, to permit no sudden change,—to see that the cold shall not further debilitate,—and that the natural powers shall be called into activity instead of external warmth.

In starvation, in another sense, the principle holds; you would not give a meal of stimulating food to a man subdued by famine.

Chilblains is the minor degree where the same principle holds. Tingling pain and redness and itching, from coming too near the fire in frosty weather, or from heating yourself before going into the frosty air. In a greater degree the toes or heels are dark blue; and if not forewarned, there follow vesication, excoriation, and ulcers. It holds with the above reasoning, that immersion in cold water is good, because it permits a slow return of action to the natural degree of temperature. When the mischief is done, there are various applications, chiefly of a stimulating nature: spirits diluted, volatile alkali, spirits of turpentine, rubbed into the parts.

R Liniment. Saponis cum Opio ℥ii.

Spirit. Terebinthinæ . ℥ii.

Misce, fiat Linimentum.

The pain of a burn every one has experienced, and the effect of its extension over a considerable surface every one can conceive: violent constitutional irritation, shivering, cold extremities, weakness of pulse, dyspnoea, effusion on the lungs, sinking of the vital powers, convulsions.

Another consideration will suggest itself; a difference in the effect on the powers of life will arise, according to the extent of the surface inflamed, and according to the degree of destruction of the skin; for the skin being the most sensitive part of the whole system, when entire, being extensively inflamed, the injury is proportionally severe. It is this which makes extensive scalding, which violently in-

flames without destroying the skin (especially when over the breast), so frequently fatal.

The following are applications to burns: 1. Place a saucer of turpentine in boiling water, and with a feather continue to cover the surface. 2. Wine and laudanum, warm, and applied with a feather. 3. Extr. Belladon. dissolved in water, and mixed with spermaceti cerate; prick and let down the vesicles, and apply the dressing, and cover all thickly with cotton wadding. 4. When there is slough, use the ungt. resinæ flavæ with turpentine. If slight, and the surface unbroken, dust with chalk, and cover with cotton.

Lime-water and milk, lime-water and oil, are favourite applications. There is nothing under heaven that Dr Thomson and Mr Cooper have not given as useful applications to burns. When I left the Middlesex Hospital, our assistants were using white-lead paint; and the report was favourable.

Cordials and opiates are necessary to sustain the system.

When resolution is not obtained, then you have suppuration—extensive granulating surfaces. Do not apply preparations of lead to these large surfaces, but mild dressing, spermaceti, and chalk-dressing. Poultices may be required when the surfaces are irritable. When high spongy granulations are thrown out, they may be covered with chalk and calamine powder, and compressed with slips of adhesive straps, or, at dressing, they may be washed with lime-water, or tincture of myrrh, or touched with a solution of nitrate of silver. See *Ulcers*, vol. i. p. 86.—*Mortification*, vol. i. p. 38.—*Adhesion from Burns*, vol. i. p. 19.

APPENDIX,

CONTAINING

CASES AND OBSERVATIONS ILLUSTRATIVE
OF THE TEXT.

APPENDIX.

OBSERVATIONS ON HÆMORRHAGE,

(Being Notes from the Author's Clinical Lectures).

THE peculiar excellence of Clinical instruction is owing to the state of preparation of the student's mind to receive an impression.

Sitting here, you do not feel that I am speaking to you of things that may occur, by some remote chance, years hence, in your own practice ; but, on the contrary, you see my anxiety, and partake of it. I particularly allude to the subject of hæmorrhage : you have to-day seen the bleeding returning after amputation, notwithstanding every precaution : and yesterday, before you had left the hospital, you found I was called back to tie the femoral artery, owing to secondary hæmorrhage taking place after the operation for aneurism.

As the accident occurred during the visit, you must all have partaken, in some measure, of the panic of the attendants, and the agitation of the patient, whose fate was impending whilst a pupil compressed the artery at the groin. You are prepared to understand the truth of the observation, that a surgeon, to be expert and active, must previously, with deliberation, have studied the principles which are to guide him in these operations. Boldness, bodily activity, and even a knowledge of anatomy, will not avail him on such occasions, unless he be directed by correct principles.

I may commence the subject of hæmorrhage as I have heard it many years ago by my brother.

“ Would you know,” says the celebrated Guattani, “ how I was inspired with love for my profession and enthusiasm in study? I will relate the manner of it very willingly, for in truth certain accidents which struck my imagination early in life were the cause. First, a bailiff, who had been shot with a pistol in the bend of the arm, was laid in the hospital of the Holy Ghost ; where, for seven days, his cure proceeded with every favourable sign : but, would you believe it? on the morning of the eighth day, when I went to visit this man, the attendants met me and told me he was dead ! This unaccountable and sudden death induced me to dissect the body : I found the side of the artery open, and the eschar, which the ball had produced, partly adhering, partly separated ; no bigger than a grain of corn : it was by the sudden yielding of this eschar that he lost his life ! Almost on the same day, another, whose artery had been pricked in bleeding, died of the hæmorrhage, without even an attempt to save his life ! Another, whose aneurism was in the ham, had a caustic applied to it, and when the eschar fell off, he bled to death ! Another still had his aneurism opened with an actual cautery, and immediately expired through loss of blood ! To these dismal scenes, which I myself have witnessed, what numbers might I not add from the consultations and writings of others.” He then told us of the case of the butcher, who died suddenly from a wound of the thigh, and which he witnessed whilst a very young man. From such examples, my brother was urged to investigate with zeal the diseases and injuries of the arteries, the nature of aneurisms, their structure, and the best methods of curing them. I believe Sir A. Cooper has also some remarkable occurrence which he relates as having attracted him to the study of our profession.*

I myself may describe to you a scene which has just hap-

* We suppose our lecturer here referred to the case of John Love, which happened forty-three years ago. See Sir A. Cooper's Lectures, edited by Mr Tyrrel, vol. iii. p. 198.

pened: it tends at least to remind you how unexpectedly we may be called upon to act.

I was coming home late at night, or rather when it was morning; the streets deserted, and the gas lights seeming to shine for the exclusive enjoyment of watchmen and women of the town. What occurred to me might well have suggested the description given by Defoe of London in the time of the plague; when, as he went through the desolate streets, he heard a woman, who had lost all her children, calling from her window, "Death, Death!" As I turned round into one of the squares, a window was suddenly raised, and a lady screamed out, "My husband has cut his throat, and is bleeding to death—will nobody bring a surgeon?" You will allow it was singular that at such a time there was an hospital surgeon passing beneath her window. I rushed into the house, but was admitted with some difficulty; the people of the house being alarmed, and naturally afraid of admitting improper persons. I made my way to the drawing-room, and here I was met with a new obstacle; for the lady, when she saw me, and knew who I was, embraced me closely, beseeching my assistance, yet holding me so that I could not move. At last I threw her from me, and going into the bed-room, found her husband lying on his back, the blood streaming from his neck. I immediately caught hold of the vessel in the angle of the wound. After having secured it between my finger and thumb, I looked round for further assistance. Instead of finding my usual assistant (my friend here, the house-surgeon, to whose attention we are so much indebted), I was somewhat puzzled when I saw one who had on a large, shaggy, white great coat; an old hat, with broad brim, upon his head, and a red night-cap under it; a beard of a fortnight's growth, and a chequered shawl around his neck. "Sir," he said, "I am off my beat; I hope you will have the kindness to answer for me why I have left it." I found that it was the watchman who was my assistant; he had followed me up stairs without my noticing him. I satisfied the old man that I would readily explain for him the occasion of his being off his beat. I was obliged to wait for some time, holding the bleeding vessels between my fingers, until some medical assistants arrived.

with ligatures and needles. I was much relieved when an old house surgeon of this hospital, Mr Tuson, made his appearance, with proper apparatus ; and to him I resigned the care of the patient. The arteries were tied ; the wound was then sewed, and properly done up.

It is thus, that having once entered upon the study of our profession, no matter what may be your intentions about practising only some particular branch of it, it is incumbent upon you to study every thing relating to hæmorrhage. Being a medical man, if an accident require sudden and prompt assistance, and you happen to be near, all the bystanders turn to you, and call upon you to afford the necessary aid. I may here repeat, that there can be no true presence of mind unless you have studied with care the most essential of all subjects—the surgery of the arteries.

Tying the Carotid.—In connection with this subject, you have a case where the carotid artery was tied. This leads us to reflect upon the difference of the effect of tying the main vessel of a limb and the carotid. The carotid artery was here tied on account of the tumour termed *nævus*. You have seen this disease in its different stages, during the short part of the season that is past. It occurred, in one case, in the neck of a child, and you saw how the assistant-surgeon operated on it, by passing the long hare-lip pins under it, and surrounding its base with a ligature. This is better than cutting out the diseased part with a knife in such cases. To have cut this tumour from the side of the throat would have been attended with great hæmorrhage. Besides, by the mode which you have seen, more inflammation is produced, and more compression at the same time ; whereby there is a greater probability of destroying the root of the tumour by condensation.

This is the disease which, in its aggravated form, is the aneurism by anastomosis of Mr John Bell. The second case is of that kind. You find a child with a soft woolly tumour, having a red spot on its most prominent part : this tumour is before the ear, behind the angle of the jaw, and extending to the cheek—that is to say, it is so entirely incorporated with bone, bloodvessels, and nerves, that you can neither operate

with the knife nor include it in ligatures. For this disease, the carotid is tied.

But before I speak of the propriety of that operation, I shall endeavour to answer the question that has been put to me—viz. What is it that is so formidable in this apparently simple tumour? This tumour very often appears as a stain or coloured spot on the skin at birth, and gradually it assumes the size and character which you have seen,—an irregular soft swelling, of a bluish colour, from which you can squeeze the blood as from a set of cells or vessels. You have observed the mulberry-like projection on the surface: it is through it that it bleeds; for that soft and vascular projection not only bleeds when touched, but often bleeds profusely and periodically. This tumour, troublesome and dangerous when thus making its progress to the skin, is doubly so when it makes its way inward. Thus I have known it on the cheek make progress to the cavity of the nose, and, incorporating with the Schneiderian membrane, bleed till the patient was blanched like wax.

Now, with respect to the propriety of tying the carotid artery for such a tumour.

[At this part of the lecture, one of the surgeons requested Sir Charles Bell's opinion on a case of strangulated hernia, and the pupils went to the operating theatre. The lecturer promised to resume the subject at the next meeting.]

The subject resumed.

You will find it recorded, that a pulsating tumour of this kind, in the orbit, was cured by Mr Travers by tying the carotid artery; and a similar case is related by Mr Dalrymple of Norwich. These were the facts which influenced the consultants upon the case of the child to whom I now refer, and in whom the carotid artery was tied. There was a bluish tumour, soft in texture, obviously containing blood, having no coagulum, no irregularity, nothing of the appearance of true aneurism, but altogether of the character of nævus. It was around the angle of the jaw, before the ear, near the throat, in that situation in which you could not extirpate it with the knife. Then came the question as to the propriety

of tying the carotid ; and you find that the voice of the consultants determined upon its being done. Well, I confess that I am against it ; and now, if you choose, my reasons may come in the form of an apology why I am against it. Supposing that this sort of tumour were an aneurism—supposing that the term which my brother has given to it were correct, then the operation might be performed ; supposing, however, that this growth is not an aneurism, but a tumour, then I hold that it is not correct so to operate ; because in aneurism you tie the artery, stop the force of the blood flowing through it, produce coagulation, and finally a cure. But there is something more required for the destruction of a tumour. What is the definition of a tumour ? It is not enough to say that it is composed of matter foreign and different from the common texture ; we bring into the definition of a tumour the action that is producing it. A tumour has a disposition to secrete certain matter, or to build up a certain structure. We cannot, by merely retarding the force of blood, alter that disposition ; and if we do not alter the disposition, the force of circulation will certainly, after a time, be restored through the inosculations. Being, then, of opinion that this is a *tumour*, you see the course of reasoning in my mind, and why I think that the tying of the carotid artery will not be effectual. As strengthening this opinion, some of you may recollect a patient brought in with a pulsating tumour on the side of the head, in which the temporal artery had first been ineffectually tied, and then the carotid with no better success. You perceive that we must return to the subject of inosculation.

You will require me to say, why is it that a part remote from the heart is as plentifully supplied with blood as a part near the heart ? Because there are two powers in operation—the heart's action, and the arterial action ; and if the part be remote from the heart, it has the greater arterial power influencing it, proportioned to the diminished power of the heart. Here, then, the physiological fact comes in explanation of the circumstances of practice. When you tie the main artery, a thousand inosculations take upon them the office of that artery, and presently you will find that the blood runs

into the main artery below your ligature. It does so in the common operation for popliteal aneurism, and if time be given these inosculation will enlarge, and at length the circulation will be perfectly restored. Now, in the head, you know that we have two carotid and two vertebral arteries, and not only are these four arteries taking the place of what you term the main artery in a limb, but if I may use so poor an expression, nature is solicitous that the vessels on both sides should inosculate with unusual freedom. These considerations, I must confess, diminish my hopes of success from tying the carotid in this case. But you will yourselves notice the fact—and it is a most important one—that already the tumour is considerably diminished; and let us wish and pray that it may not be half diminished, but altogether absorbed, and carried away.

[Sir Charles Bell, recurring to this case in the succeeding lecture, observed, that he was again called to a consultation on this child, to determine on the propriety of operating on a similar tumour situated on the opposite cheek. The consultation determined against using the knife. “I take blame to myself,” said he, “for not having noticed this tumour on the opposite side before; it would have been an additional motive against tying the carotid; for, if stopping the course of the blood on one side should be effectual in diminishing the tumour, the force of circulation directed circuitously to the other side, should be equally powerful in adding to the turgescence of the tumour there.”]

Secondary Hæmorrhage after Tying the Carotid.

The next practical question which we may, with all propriety, entertain, regards still the freedom of inosculation, especially between the arteries of the head. There is no occasion for the formality of a case being drawn up; for the whole important circumstances which I have to refer to are before you. A gentleman, in a state of irritation and temporary derangement, stabs himself with a penknife under the ear. He is brought into the hospital, and the bleeding has ceased. It appeared subsequently that he had struck the artery. I have known a similar occurrence:—An unfortunate

lady resolving to destroy herself, in a state of great depression of mind, takes the volume of our system of anatomy which treats of the arteries; she reads the account of the carotid, and carefully noting its situation, and feeling its place with her fingers, she puts a small penknife directly into it. She was found in the morning hardly sensible, the room deluged with blood, and herself deprived of motion on the opposite side of the body. The bleeding had been so profuse, the arterial action so reduced, that time was given for the formation of a clot where the artery was punctured; the parts closed in the course of the deep and narrow wound, and a pulsating tumour formed. You will perceive the slight difference between this case and that of a true aneurism of the carotid with regard to operating. The carotid artery was tied by my brother. The incision was made of two or three inches in length, upon the edge of the sterno-cleido-mastoideus muscle; the platysma myoides was divided; and the main artery tied: the operation was effectual. See, then, the necessity of carrying the principle with you. How was this operation successful? Because, although the tumour was occasioned by the puncture of the artery, yet it had all the characters of true aneurism; inasmuch as it was a small, circumscribed, pulsating tumour, resembling that which takes place at the bifurcation or division of the carotid. Had the wound not closed, had the puncture of the artery still bled, the rule of practice would have been very different.

I am very desirous that you should understand the difference between true and false aneurism, and also that you should be aware that what is termed *false* aneurism may be in its circumstances so like a *true* aneurism, that you may operate upon it, as in the case of this lady, in which my brother operated, by tying the main trunk of the artery remote from the tumour. You have, I hope, understood, that when you tie the artery in a common case of aneurism, for example, of the ham, the blood is not altogether stopped, but only retarded in the tumour; so that it coagulates. So free, indeed, are the inosculations, that were you to take off the limb below where you have tied the artery, you would find the blood springing from the trunk of the artery. *A priori*, will not the current be similarly restored in the vessels of the head, where

you are not tying the principal artery, but one of four arteries into which it is, as it were, subdivided, for the purpose of equalizing the circulation in every part of the brain? Now, to return to this man, who stabs himself with a penknife. The vessel did not bleed in the hospital. Whilst here, he lay under my name. After two days he was carried out of the hospital. Hæmorrhage comes on after he is carried home, and the trunk of the carotid artery is tied; the hæmorrhage returns, and he dies. This is the whole history as connected with our subject; and there is no occasion to dwell upon it. These are the important facts, and am I not borne out in saying, that it would have been better had this patient remained in the hospital? Certainly I am. And let me tell you how you should treat such a case. You are not to tie the carotid, but, if possible, the artery at the point wounded, and above as well as below the wound. If you look to Mr Abernethy's works, which I hope you often consult, you will find the case of a man who had his carotid artery torn by a bull's horn, which entered under the angle of the jaw, and you will, in the detail of that case, understand all the difficulties of taking up the vessels in a wound of the neck. He put a ligature round the carotid, to act as a tourniquet—he drew the ligature, sponged out the wound, and sought for the bleeding orifices, but in vain. He undid the ligature, that he might see the jet of blood; but instead of that, the wound filled with blood, and he could see nothing, and he was constrained to finish the operation by drawing the ligature upon the carotid. Now, I say that this is wrong. What you have to do in a similar case is, either to enlarge the wound, or to make an incision in the neck low down upon the anterior edge of the sterno-cleido-mastoideus, carrying it through the platysma myoides, that you may insinuate your finger and thumb under these muscles, when, without opening the sheath, you can lay hold of the vessel. Having laid hold of the artery, clean out the blood from the wound, and try to find the orifices of the arteries: you can then open the finger and thumb, and let a jet escape: notice where it comes from, and in the instant, by closing the fingers, stop the blood: by this means you are enabled to find the bleeding orifice. If it be the great vessel, tie it above as well as below the wound. You know that if

the artery be opened in the thigh, and you tie it above the opening, the blood in half an hour will come from the lower part, so free are the inosculations ; and, indeed, if the secondary hæmorrhage be delayed so long as half an hour, it is only in consequence of the extreme exhaustion of the patient. Will the same thing not happen also in the neck ? Remember the rule, then, and the reason of it,—to tie both extremities of the bleeding vessel in false aneurism, and in the wounded carotid. As to the carotid, what can you expect from tying it below only, but secondary hæmorrhage by returning blood. In Mr Abernethy's case, the patient died soon after the ligature of the artery, from the loss of blood which he had suffered : had he lived, he would have had secondary hæmorrhage from the internal carotid, by the circuitous vessels.*

On Wounded Arteries of the Fore-Arm.

The education of our assistants, the house-surgeon and assistant house-surgeon, and I may say the surgeons in private practise in the neighbourhood of this hospital, deprive you, in a manner, of the opportunities of studying this subject ; for you know, I presume, that bad surgery makes a better ground for a clinical lecture than correct practice. Distressing cases of wounded arteries do not come before you, because our young men are anatomists and diligent students, and they not only know what to do, but how and when to act. With the cases that I am now to place before you, you may contrast many that are upon record ; and of these you will find an abundance in my brother's works. In that great work (which, if you have not perused, you know little of the interest which your profession is capable of exciting), you will read of the horrors which are consequent on ignorance of anatomy and of timid conduct, or of ill-advised operations ; where principles have been lost sight of, or rather, we should say, never learned. When an artery has been wounded, where the surgeon has been ignorant of the anatomy—where he has, therefore, been all abroad as to what to do—where

* We have an interesting case of the rupture of carotid aneurism into the throat, where Mr T. A. Robertson put a ligature on the trunk with success.

ineffectual compression has been used, and consequently the blood has been driven into the cellular membrane—a most distressing and difficult case is presented, even to the most intelligent and active surgeon : for with the ineffectual operations and pain the inflammation rises, and the cellular tissue is injected with serum, in addition to blood ; so that, at last, when the patient presents himself to the surgeon, there is unusual difficulty in detecting the bleeding orifice of the artery.

Another prefatory observation is, that, in consequence of the aphorisms of practice being established, you have none of the difficulties to contend with that they had who have preceded you ; and therefore you ought to feel grateful to those who have laboured so effectually to establish the right rule of practice.

Sir Charles then read, from the house-surgeon's case-book, this case of

Puncture of the Radial Artery.

“ Charles Bartlett, æt. 21, a shoemaker, came to the surgery, with a wound almost exactly in the middle of the fleshy part of the fore-arm, about half an inch in length, rather towards the ulnar side of the arm, apparently not in the direction of either artery. The lips were nearly adherent, but on pressing on the sides of the cut a little clotted blood escaped : it appeared, however, of slight importance. The patient was told to go home, to poultice the wound for a night, and return the next day to have it properly dressed. However, about eleven o'clock at night he returned, having lost four or five ounces of blood ; but the hæmorrhage had been stopped by a tight bandage. We now questioned him more particularly about the history of this accident, and it appeared that he had received the wound three days ago, by a sharp-pointed knife having been thrown at him in a *lark*”—(I hope this is the patient's expression, not the taste of the narrator) ; “ that he had lost much blood at the time, and had gone to a chemist's, who strapped up the wound and stopped the bleeding ; that on the two following days the bleeding had burst out afresh, and had been stopped in a similar manner ; and that the chemist now told him there was a large vessel wounded, which it would

be necessary to cut down upon and tie. On undoing the bandage, a small stream of arterial blood flowed from the wound; the wound was enlarged by a longitudinal incision; the blood appeared now to come from above and below, in a more considerable stream, and seemed as if it came from the interosseal artery, yet no wound ran between the bones. Some coagulated blood was now pressed out from a deep part of the wound next the radius. The blood then came in large quantities, and evidently from the bottom of this wound, which led in a direction towards the radial artery; it was easily stopped by pressure on this artery above and below the part wounded. The external edge of the wound being more than an inch from the artery, it was found necessary to make a regular dissection for the vessel. He was therefore put to bed, to await the visit of the surgeon next day, a compress being placed on the artery above and below the wound, which completely commanded the hæmorrhage.

“When the surgeon saw him, he would scarcely believe that it was the radial artery, and not the ulnar artery, that was wounded; the latter seemed, from the direction of the wound, so much the more likely to have been injured. The compresses were removed, but no blood flowed. He desired that the arm should be kept raised, a cold lotion applied, and that he should be sent for if the hæmorrhage returned. None appeared till four o’clock, when it again burst out. The tourniquet was put on, and the surgeon sent for. He having convinced himself that it came from the radial artery, cut directly down upon the artery, and connected his incision with the wound. The two flaps thus formed were turned back, and, after a little careful dissection, the artery was exposed, and the nature of the wound in it proved just such as was anticipated. It was punctured in such a manner as to divide one-third of the circumference, and the retraction of the elastic coat, and the contraction of the muscular fibres, gave it exactly the appearance of having had a piece cut out. The tourniquet was now removed, and the vessel compressed above and below. The artery was divided at the puncture, and both ends tied at the distance of a few lines from the ends. The parts near the wound had been too much exposed and

separated from the surrounding parts by the dissection and the injection of the cellular membrane. The wound was dressed ; in five or six days both ligatures came away, and the wound soon healed by granulation."

(1.) This is a case coming the nearest of all to such as I have described, where mischief has been occasioned by imperfect compression ; and I offer you the following remarks upon it :—

First, " the blood came from above and below." That to you, as anatomists, will not appear remarkable, when you recollect the free inosculations between the radial and ulnar arteries, through the superficial and deep-seated palmar arches : but it has been imagined necessary that the anatomist should trace the inosculations, to account for the blood returning so freely from the lower part of the artery of a limb. Not at all ; in the flesh of the thigh, the shoulder, the arm, and indeed every where, there are sufficient small vessels—vessels which are exceedingly active, capable of high excitement and increased activity—to account for the flow of blood from the lower orifice ; which, indeed, takes place, in certain circumstances, from all arteries, wherever divided. It has been stated in some of our books,* which, in other respects, are excellent authority, that it is only necessary to take up an artery, in the arm for example, above the wounded part ; but in this case you perceive that there was an immediate necessity for tying the artery above and below the wound. Even if the lower extremity does not bleed, yet, if you take up the artery only above, you are almost certain to be called to a secondary hæmorrhage ; and there is such a welling of blood from the wound, that you have difficulty in deciding whether it comes from the failure of your ligature or from the lower part of the artery, and you are under the necessity of putting down a compress most probably within the wound, thereby occasioning great inflammation, tumefaction, and a tedious cure ; all of which may be avoided by taking up first one end of the artery and then the other, so that there is nothing left in the wound but thread, and no particular excitement.

(2.) My next observation is, that when an artery is punc-

* The lecture was delivered in 1823.

tured and does not bleed, as was the case here, it is exactly what you are to expect. You are called to a patient who has suffered suddenly by hæmorrhage—perhaps blanched by loss of blood; you ascertain by this circumstance that a vessel has been actually wounded, but now it does not bleed. You are thrown off your guard, you go away, and you receive a second hurried message that there is another hæmorrhage. What then is to be done, when, from the circumstances of the case, the direction of the wound, the quantity of blood lost, you think the artery must have been struck, and yet the vessel does not bleed? One thing you ought always to try—and that is, to compress below the orifice, that is to say, more remote from the heart; and if the vessel have been only wounded in the side, or punctured, you will, in all probability, find that the hæmorrhage recurs—that the blood being prevented from going down the artery freely, passes out by the wound.

(3.) You must also consider whether there is any thing in the position of the limb. If a man be engaged in a struggle, and the point of the knife enters through certain muscles, the moment the arm is changed in position, all these surfaces shift and lie over the wound, and the track of the wound becomes oblique and irregular; so that a coagulum is found in the interstices of the part and around the artery. It is well sometimes to study the position of the part when wounded—to place the limb in that position by which you ascertain the track of the wound through the several parts, and leave the passage free for the exit of blood.

(4.) There is another circumstance, not to be explained on mechanical principles. An artery bleeding stops from exhaustion, and after a time the hæmorrhage again returns. I do not pretend to explain it, but such is the fact, that there is an impulse, an excited action, in the artery to resume the circulation; and sometimes this is marked by pain in the part. I have sat watching a patient, and known when to bestir myself and put my finger on the compress, from the pain striking down the limb; the pain producing an increased activity of the vessels, and that being a harbinger of a new breaking out of the hæmorrhage. Thus it seems to be a law, that a vessel

having exhausted itself, shall after a time recover and resume its hæmorrhagic action. These are the circumstances that throw you off your guard, and sometimes induce you to leave a patient when he is in imminent danger of a return of hæmorrhage.

(5.) The next observation upon this case is very important. You will observe that the incision to find the vessel was made in connexion with the wound. That practice is quite correct, because we know very well that we have cases on record where the surgeon has trusted entirely to his knowledge of anatomy, and has said, "I see where the artery has been wounded, I will cut down upon it;" whereas he has cut down upon the side of the vessel not wounded, and therefore has not discovered the puncture, and much unnecessary dissection, unnecessary pain, and destruction of the parts, have been the consequence. Trust to anatomy as much as you may, dissect for the artery according to your knowledge of the parts, but take the assistance of the wound itself. Either pass a probe, or your finger, through the wound, and make the incision to communicate with it; so that when the artery bleeds, it will pour the blood into the wound formed by the incision, and you will have less difficulty in ascertaining the point whence it proceeds.

(6.) The next observation is upon a very important and curious point: the artery appeared as if a piece were cut out. This explains why an artery does not heal. When an artery is struck, it contracts in one way, and retracts in the other; that is to say, the elasticity of the parts causes retraction, and muscular action induces contraction, so that the wound gapes; and it has no tendency to heal, because the edges are turned out. This I have seen in a way in which I could not be mistaken. When the artery of the arm has been wounded with the point of a lancet, I have seen it appear as if it were torn largely; and so the narrator states here, that it appeared "as if a portion had been cut out of the artery."

The artery was divided, and both ends taken up with a tenaculum; that is the easiest and the best way. By this means you avoid diving with the aneurismal needle, and the danger of passing it across the ulnar nerve, if it be the ulnar

artery on which you are operating. If the vessel be only wounded at the side, I think the best plan is to divide it altogether, to pick up one end and tie it neatly, and then pick up the other.

The second case is that of

Division of the Ulnar Artery.

“ Ellis Hayward, æt. 36, came to the hospital with a gash across the wrist, made by a piece of sheet-iron falling upon it. It had bled profusely, but had been soon stopped by winding a piece of broad tape tightly around the arm. He was faint from the sudden loss of blood, though it appeared that he had not lost much. When the bandage was removed no blood flowed, though the cut crossed the course of both arteries. The radial artery was seen distinctly pulsating in the wound, but was uninjured ; the ulnar was completely divided ; both ends were distinctly visible in the wound. The extremities were not involved in any clot, but were pulsating strongly, and considerably retracted, and so contracted, that not the slightest aperture was visible in their centre, nor a drop of blood flowing from them. Meanwhile a little artery of the skin was pumping away from the lower lip of the wound. The ends of the divided artery were very easily distinguished by the touch from the divided tendons and nerve. The two ends were then separately transfixed with the tenaculum, and tied, the wound dressed, and a splint and bandage put on the arm to keep the wrist slightly bent. He was sent to bed, and the arm kept wet with cold lotion. In the evening he was flushed and feverish, with a strong frequent pulse, and much headach.

“ He was ordered a dose of calomel, and the Haust. Salin. c. Magnes. Sulph. Ziss. et Vino Ant. gtt. xxx. 4tis horis.

“ Sept. 13th.—In the morning he was still very feverish, the headach severe, and pulse very strong. He was therefore bled to eight ounces, which relieved him. The bowels were opened, and the medicine continued. In the evening he became more flushed and feverish, and the medicine was ordered to be continued every two hours.

" 14th.—He was much better ; purged ; the wound uniting by granulations ; the ligatures were twisted ; compresses and splint reapplied. Fever again in the evening.

" 15th.—In spite of care to prevent any matter being confined, a little pus can be squeezed out of the wound, and there is a slight blush around the wound ; the fever, however, is less. He is a great deal reduced by purging and antimonials ; no headach.

" 16th.—Slept well ; much better ; more pus in the wound ; restrictive compresses necessary above the wound, and very light dressing ; only sufficient bandage to fix the splint.

" 17th.—Both ligatures came away to-day, being the fifth day ; both have been regularly twisted at each dressing. Half-diet and porter.

" 18th.—Tendon of the flexor carpi ulnaris, and palmaris longus, sloughy.

" 19th.—Made an out-patient."

1. The first point to which I would call your attention in this case, is the retracted and contracted condition of the artery, and the hæmorrhage not recurring. You will distinguish this case from the next, for here the artery was cut across by a piece of sheet-iron, which I suppose had not a very sharp edge. You will always find, that if an artery be touched with a lancet, or opened by a spicula of glass, the injury being less, it bleeds more freely than if it be divided by a coarse instrument. In the latter case the contraction and retraction is greater, as well as the general injury to the coats of the artery ; and the disposition to form coagulum is greater. You observe that the divided ends in this case were discoverable by the touch ; that is just the consequence of the combination of contraction and retraction giving a degree of rigidity to the vessels, which enables you to distinguish them from the surrounding soft parts.

The third case is

Division of the Radial Artery.

" Ann Twyford, æt. 28, came to the surgery on the 6th October, with the blood dripping fast through the rags that had been hastily wrapped round a wound of the fore-arm. The

wound had been received by the hand slipping off the bar of the window, in the act of pulling it down, and so thrust through the glass. It was about ten minutes after the accident that she walked into the hospital. She had lost much blood, and was getting faint, and the pulse was running very rapidly. The arm was grasped above, and the bleeding stopped. The flexor carpi radialis, and the palmaris longus, and part of the superficial flexor digitorum, had been divided. The outer end of the wound terminated just over the course of the radial artery, so that it was necessary to prolong it a little to get at the vessel. *The lower end* of the artery was the first to bleed when the pressure was removed. After it had been secured, the upper end, which had retracted most, was picked out and tied likewise. The ligatures were slightly twisted, and the wound dressed as described in Hayward's case. She was sent to bed, and had some opening medicine.

"The 8th and 9th.—Wound dressed ; looks well ; ligatures twisted.

"The 10th.—One of the ligatures came away.

"The 11th.—The other ligature came away, this being the fourth day after the accident.

"The 23d.—She is still in the house, but would be better at home, as she seems to suffer from the air of the hospital, having twice had diarrhœa and a blush around the wound."

1. Connect these two circumstances together ; the artery is divided by a piece of glass, and you observe the wound is bleeding all the time, and the blood is oozing through this compress of cloths. This is the character of the wound, in opposition to the last case, where the artery had been more bruised, and confirms the observation I made, that the slighter the injury to the artery, the more freely it bleeds. This marks the distinction in regard to different kinds of wounds—lacerated, bruised, and incised. You are aware that a limb may be carried off, and no blood lost—that is, the artery is drawn out and injured, so that a coagulum of blood is formed in it. I remember, when I first came to town, being in the society of some of the most eminent men, and the conversation turned upon this very subject. I took the opportunity

of remarking, "You are considering the matter too mechanically ; if an artery be torn it stops bleeding. If I amputate a breast, and the vessel spouts out, and I take hold of it with my forceps, turn it round, and twitch it, it ceases to bleed ; nay, if I even take hold of it with my forceps, and squeeze it hard, the same effect is produced." "Oh, then," said my friends, "the reason is this : when an artery is torn, the inner coat being more brittle than the others, is divided into shreds, and they act as valves, so that the bleeding is stopped." That was undoubtedly an answer to my assertion, but it did not convince me ; and I went down to the dissecting room, exposed the radial artery, put a strong probe under it, and tore it asunder. I then opened it, and examined it particularly, and found that although the coats had been torn, no such laceration of the inner coat as converted the shreds into valves had taken place ; therefore my first position was a correct one. It is not a mechanical cause, but an effect upon the living property. You destroy the life of the vessel, or injure it to that degree, that it no longer exercises its influence in preserving the blood liquid, and it signifies not whether you twist, tear, or bruise the artery, the blood ceases to flow from it. When the principle of surgery is fairly laid down, and established in the pupil's mind, there is this happy effect, that he is not at once moved to wonder and carried away by new facts, such as this new method of twisting arteries instead of tying them.

2. Now here is the point much talked about at the present day—the torsion of arteries. There are none of my old pupils but must know what this torsion means. It does not mean that any mechanical change has taken place on the tube, whereby the blood is stopped ; but that all injuries, whether from the presence of a compress, or of a ligature, or the death by gangrene, tend directly to produce this result—to cause the formation of a clot, in consequence of the relation established between the liquid condition of the blood and the healthy and natural influence of the arterial coats being destroyed.

3. One remark more on the necessity of twisting the ligatures. In several of these cases the ligatures were twisted ; and observe what that means. If you take up an artery, se-

parate the ligature, and cut off the ends near the knot, leaving only one end, you cannot twist it, you must wait for the process of nature throwing it off. You may have observed from a late operation of cutting off the ligature from an artery, that it is not always easily performed, especially when there is only one thread.

My practice has ever been, not to cut off one end of the ligature. If the ligature be left quite free in the wound, the separate threads may be entangled among the granulations, and so retained for too long a time ; but if you take the two ends, make them parallel, twist them, and lay them down, they do not interfere with the granulations, and are not entangled. On the third day you have an opportunity of twisting them a little more ; and from the third to the fifth day they come away without the necessity of pulling upon them. The first object is not to allow the threads to be connected with the granulations ; the second is to have an opportunity, on the third or fourth day, of tightening the knot without pulling ; whereas, if there be but one ligature, the only means of taking it away is by pulling, and you can easily conceive what may happen.

The next case is

Wound in the Ulnar Artery.

“ Charles French, æt. 30, a coachmaker, on the 8th of October wounded the ulnar artery with a chisel. It bled most furiously ; but he immediately commanded the bleeding with the thumb of the other hand, and came running to the hospital.

1. It is remarkable, indeed, how little pressure, if properly applied, is effectual. You see a wound bleeding, and every body hurrying to stem the hæmorrhage, putting cloth over cloth, whilst the artery seems to be working with the force of an engine ; but when you expose the proper bleeding point, and press upon it with the weight of the finger, it is effectual. I could illustrate this fact with many curious instances, shewing how men very high in our profession have been mistaken in regard to the force of an artery. Into this error they have fallen from seeing the force with which the blood is splashed

from an open wound, even during their compression at the groin or above the clavicle ; and because they have not had occasion to notice the very slight pressure of the finger that stops the blood, when placed directly on the face or side of the bleeding vessel. (The case proceeds :—)

“ When he removed his thumb the blood spouted out violently ; and not being easily commanded with the hand above the wound, the tourniquet was put on. The ends of the divided artery were buried in the ragged muscle ; the upper one was picked out and tied, but there was some difficulty in recognising it, for it had been so obliquely divided as not at all to look like an artery ; *the mouth being flat and expanded, instead of round and contracted.*”

2. The commentary being resumed, the lecturer observed,—That is remarkable ; we have just heard it stated in the former case, and I dare say accurately, that an artery divided across was retracted and contracted ; but here being divided obliquely, a totally different appearance was presented. It was expanded.

“ The tourniquet was now loosened, to find the lower end more easily, and blood came from it in powerful jets.”

3. So that here again you see the rule is confirmed. The upper end of the artery was tied, and the lower end began to bleed.

“ This lower end was drawn out and tied, the ligatures gently twisted, the wound brought together with strapping, and a splint put on to prevent motion. On the fifth day the ligatures both came away, having been twisted at each dressing.

“ Oct. 14th.—Nearly healed. An outpatient.”

4. There is one circumstance which I beg to notice, and which escaped me in its proper place. You will find in some of these cases, that it was possible to compress the artery above and below the wound ; and that being done by an assistant, there was no blood in the wound. But you must not always expect to do this ; if there have been bad treatment at first, the cellular membrane is injected with blood, filled with extravasated serum, and then it would be impossible, even by a tourniquet, to stop the blood, and certainly it cannot be

done by compression with the hand. It is only when there is no tumefaction that the pressure of the thumb above and below decidedly and firmly can be effectual in stopping the bleeding.

Lacerated Scalp.—Abscess.—The Artery opened by the Lancet.

The next case is,—“A man with a lacerated scalp. He had an abscess formed in the temple; this was opened with a lancet, but some bleeding followed: it was stopped, however, with a compress for a time. The bleeding returned on the two or three following days, as absorption took place below the compress. At length the wound was laid open; but the vessel could not be laid hold of by the tenaculum, but a small cut was made across the direction of the vessel; the wound remained open, but no more hæmorrhage occurred.”

Here is another circumstance in confirmation of what we learned from the other cases, that so long as a vessel is kept entangled and stretched, so long it will bleed from time to time; but being divided, the hæmorrhage ceases. If there be bleeding from the temporal artery which you cannot arrest, divide it, and it stops. In bleeding from the temporal artery, if you cut it across you do not get enough of blood for the same reason, and therefore it is your aim to open it at the side only, in correspondence with the principles shewn above.

I must once more remark, that these cases which have been properly treated by surgeons acquainted with the anatomy of the arteries, stand in remarkable contrast with others—not only with such as are on record, but it may be with those which may hereafter come under your care; for if a wounded artery be neglected, or improperly treated in the first instance, or if the blood be confined by the closing of the outer wound without securing the bleeding vessel, a very different scene presents itself, and your difficulties are much greater than you would suppose from these narratives.

Case of Foreign Body in the Trachea.

Sept. 1.—Mary Waters, æt. 9, was admitted into the hospital at nine o'clock this morning, with symptoms of suffoca-

tion. The report given by the friends was, that yesterday afternoon, being in school, and eating a plum, the child laughed, and was reprimanded by the mistress, who gave her at the same time a slight tap on the cheek ; at that moment the child was sensible that the plum-stone had got into her throat. She was immediately seized with a difficulty of breathing, which has continued, with occasional severe attacks, ever since. A probang was passed into the œsophagus, and an emetic was given to her, before she came into the hospital.

It was evident that she required immediate relief. Sir Charles said that he slipped, unobserved, to her bedside, so as not to disturb or frighten her, for the purpose of examining her manner of breathing. She lay with her head raised high ; she was restless, shifting her position, and tossing her arms ; her chest rose high ; and her nostrils were dilated ; the sound of her breathing was hissing, husky, and impeded—it was in sudden gasps.

Having collected what tubes, probes, and forceps, were likely to be of use, the child was laid on pillows, placed on the table so that her position was inclined, not horizontal. This was done for two reasons—because a person breathes with difficulty in the horizontal posture—and, because it permits the blood in the wound to flow outwards.

An incision was made through the integuments an inch and a half in length, the centre being opposite to the cricoid cartilage. The thyroid and guttural veins were seen turgid ; it was not possible to avoid them, and they bled freely. Continuing the dissection on the fore part of the trachea, a small artery, the thyroidea anastomotica, was divided, and the wound bled considerably, so that the incision into the larynx was delayed a few minutes. The point of the scalpel was then thrust into the membranous space between the cricoid and thyroid cartilages. The child did not appear relieved, or only in a very slight degree, by this opening.

“ My disappointment was now considerable. When I had done this operation before, the relief was immediate ; no sooner had the point of the knife penetrated the membrane than the harsh sawing sound of the voice ceased, and the air

came *siffling* through the wound ; and when the end of the scalpel was used to hold apart the sides of the slit, and a quantity of mucus was discharged, the breathing was composed and easy."

The probe was passed upwards through the glottis into the pharynx, but nothing foreign was found interrupting the passage. The probe was then passed from the wound in the larynx down into the trachea, with every precaution, lest the foreign body might be thrust downwards by it ; but nothing was to be discovered there. At this time the breathing was worse ; the child's colour was darker, and a degree of insensibility prevailed. A portion of a large gum catheter was passed down into the trachea, and retained there, and the child's face and neck were bathed with cold water. The breathing became sensibly easier, and the freshness of colour returned to the cheeks and lips. The tube being withdrawn, further attempts were made to discover the stone, but without avail. Sir Charles at this time thought of putting the child to bed, but, resolved to leave nothing undone, he explored the passage once more. He felt the pharynx with his finger introduced into the mouth. He then passed the catheter by the wound through the chink of the glottis, and examined the sacculi laryngis ; he then sounded deep into the trachea ; and now he thought he could feel a roughness more than belonged to the cartilages. He, therefore, enlarged the incision downwards, and having bent the end of a probe so as to make a little hook, he passed it down into the trachea ; by means of this, he succeeded in catching the edge of the stone, and brought it to be visible in the wound ; then, with the small dressing forceps, he extracted it. It was half of the stone of a plum, and it had lain with its rough convex surface towards the concavity of the tube.

Immediately after the stone was withdrawn, the child opened its eyes and looked about, apparently with the conviction that the thing was accomplished. Nothing could be more striking, during the whole of the operation, than that a child so young should have so perfect a notion of the necessity of something being done for its relief, and that it should remain so submissive.

The wound was dressed superficially, and the child was put to bed, breathing freely—to the great delight of those present, for it had been abundantly apparent that it was an affair of life or death.

Evening.—The child is perfectly quiet, and has slept a great deal.

Sept. 2d.—She is remarkably well; she speaks low, and complains of hunger. She breathes at present with perfect ease, and has done so ever since the operation. Leeches have been applied to the neck, and she has had some laxative medicine.

Sept. 13th.—The child is running about, and is quite well; but the wound is still open, and the granulations projecting. The zinc lotion is ordered, with compression by adhesive strapping.

Sept. 23d.—The wound is healed. Sir Charles said, that the father, with the child in his hand, came running after him as he left the hospital to return thanks. When he said to the father, “I am distressed that the child has not recovered its voice;” he replied, “It was only her shyness; she speaks as well as ever she did in her life.”

Case.—Jeremiah Kentish, aged 60, a labourer, was admitted on the 23d October with general anasarca, his legs and thighs being more swollen than the rest of his body. His respiration was difficult, and attended with a wheezing sound, audible at some distance. He complained also of cough, and of inability to lie down in bed; and stated that during the preceding night he had been nearly “choked.” His pulse was hard, but not full. His bowels were reported regular; his urine scanty, though he had a frequent desire to void it.

He declared that the swelling came on suddenly, only five or six days before; that at first his face was so much swollen that he could scarcely see; that he had no previous illness, except a recently slight shortness of breath; and that he knew no cause of the attack.

16 ounces of blood were directed to be taken from the arm.

or more, according to the effect of the bleeding; and 8 ounces from the chest by cupping.

4 grains of calomel to be given immediately; and a senna draught four hours afterwards.

24th.—He was bled from the arm to 24 ounces, with very little relief to his breathing. He now says that he lost a pint and hal fof blood the night before his admission. His bowels have been thoroughly purged. Urine plentiful, acid, and with a pink sediment. The anasarca has almost entirely disappeared. He is now sitting up in bed, breathing with great labour, and with a loud stridulous noise, which accompanies both respiration and expiration: he refers all his uneasiness to the larynx, and to the ensiform cartilage. He swallows with difficulty, and every effort of deglutition excites a fit of choking with cough. There is no morbid appearance to be seen in the fauces. He has expectorated a small quantity of viscid yellowish mucus. Every part of the chest sounds well on percussion, and the murmur of respiration can every where be heard, almost drowned, however, in the louder laryngeal noise.

He vomited freely soon after swallowing a scruple of ipecacuanha. This was followed by no improvement.

12 ounces of blood to be taken by cupping from the back part of the neck.

3 grains of calomel to be given every three hours; and $\frac{1}{2}$ of a grain of the acetate of morphia immediately after the cupping.

During the afternoon the steam of hot water was inhaled for some time, and twenty leeches were applied near the larynx.

In the evening the difficulty of breathing increased still more, and each act of respiration was attended with a loud croupy sound: his countenance was now anxious and ghastly, and his pulse was less firm. It was Dr Watson's opinion that he would probably not survive the night, unless the operation of tracheotomy was performed, and that his general condition was such as to afford good ground for hoping that his life might thus be saved. Between eight and nine o'clock, he sent to request Sir Charles Bell's assistance, who immediately

attended at the hospital. Mr Joberns and Mr Arnott were also present ; and all agreed upon proceeding to the operation forthwith.

Although the patient was placed in a bed at the further extremity of the ward, the crowing sound of his breathing could be heard before entering. Upon approaching him, he was seen sitting forwards, moving with restlessness from one side of the bed to the other, and throwing his arms about, as if seeking for some new place of support. His countenance was pale and expressive of great anxiety, and his lips were of a livid blue colour. His shoulders were in continual action, being alternately elevated and depressed to the utmost ; and the prominent larynx moved up and down in a remarkable manner, corresponding with the laboured heaving of his chest. He spoke with sudden, and as it were, convulsive efforts, earnestly expressing how thankful he should be to have the obstruction of his breathing removed, and said that in every other respect he felt easy, being free from pain except at one part, pointing with his finger to the lowest part of the larynx.

It was remarked how very short the space between the larynx and the sternum was, and that when the larynx was drawn down by the action of its muscles, there was scarcely half an inch between the upper part of the cricoid cartilage and that bone.

The operation was begun by pinching up the skin over the space between the thyroid and cricoid cartilages, and then dividing the fold thus made with the knife. Two small arteries, which threw out a stream of blood more than two feet, required to be secured by ligature. After dissecting a very little, the point of the knife was thrust into the membrane which joins the fore part of the thyroid and cricoid cartilages, and the blood in the wound shewed by its frothiness that the air-passage was opened. The longitudinal slit which was thus made, was enlarged by cutting with the bistoury sideways ; and after this was done, it was attempted to introduce a silver canula into the trachea. But as soon as this instrument entered the larynx, a dreadful paroxysm of suffocation was the consequence : the patient gasped, struggled, and

drew his breath with a moaning sound, occasionally interrupted for some seconds, as if he were on the point of ceasing to respire altogether ; and it was a considerable time before he could be restored from this attack, so as to submit again to the operations of the surgeon. It was next attempted to keep the slits of the wound apart by introducing a catheter wire, previously bent upon itself, into the opening ; but another paroxysm of suffocation, more alarming than the former, and lasting a greater while, was immediately produced ; and the interrupted and vain attempts to express his distress with words, the laborious heavings of his chest, the perspiration starting in drops from his face and brow, all shewed the intolerable nature of his sufferings, and how impossible it was to retain such an instrument in the wound. Finding it thus impracticable to preserve a tube within the trachea, it was resolved to remove as much of the membrane which surrounded the opening already made in the larynx, as would permit the air to have a free passage into the lungs. Upon commencing to do this, it was astonishing to every one to what a depth the larynx was withdrawn, it being not less than an inch and a half from the surface of the wound. What principally, however, created a difficulty in the object proposed by the operator was, that the inner membrane of the larynx had become so extremely irritable, that whenever it was touched, however slightly, by the hook, the blades of the scissors, or any other instrument, a fit of coughing and an attack of laborious breathing were excited. Besides this, the larynx had a continual rapid movement upwards and downwards, (resembling the incessant rising and falling of the piston of a steam-engine at work,) and thus the depth of the larynx, the extraordinary irritability of the mucous membrane, the constant movement of the windpipe, together with the filling up of the wound with blood, as quickly as it was sponged away, all conspired to make it an operation of great difficulty to remove the angles of the membrane that were left. Another circumstance was observed deserving of attention, since it prevented respiration being performed through the orifice in the larynx : at each inspiration, the lips of the opening, which were seen to be expanded during expiration, became completely shut ; and

this was obviously consequent upon the thyroid and cricoid cartilages being drawn, by the action of their muscles, more closely together during the act of inspiration. Sir Charles Bell remarked that the spasmodic action, producing this shutting of the orifice, even caused the cartilages to pinch the point of his finger : it was from observing this fact that to some of the witnesses of the operation it appeared indispensably necessary to have a tube inserted into the windpipe. The cricoid cartilage was so hard, that it was supposed to be ossified : and whenever the bistoury or strong scissors were employed to cut a piece out of it, fresh paroxysms of suffocation were produced. Several loose portions of the membrane were removed from the orifice in the larynx, and also those loose portions of the cellular membrane which were in danger of being sucked inwards during respiration were snipped away. Two catheter wires were then employed to hold the integuments apart : this was accomplished by doubling each of the wires, and forming their bent extremity into a blunt hook, resembling that which is sometimes used for holding the eyelids separate in operations upon the eye : one of these hooks being inserted on each side of the exterior wound, and the wires being bent round and fastened at the back of the neck, the surface of the windpipe was kept freely exposed. When this contrivance had been applied for a little, the breathing became greatly improved : and as an indication of the relief which the patient had received, he fell sound asleep. The crowing sound continued, which proved that his breathing was not altogether performed through the wound. An assistant had to be placed behind the bed-chair to prevent the patient's head from nodding forwards in his sleep, which he had already shewn deranged the apparatus in the wound. The pulse was 93, and of good strength.

3 grains of calomel to be taken every two hours.

25th.—He passed a tolerably good night, sleeping a good deal at intervals. The aperture is smaller by the swelling of the soft parts. The respiration is carried on chiefly through the wound, but with labour and hissing, and occasional expulsion of viscid mucus. Last night a small portion of his powders was observed to issue at the wound ; and the same thing has since happened upon his swallowing milk. He can swal-

low liquids only; and he experiences some difficulty, apparently, when they are in the act of passing through the bag of the pharynx. The sound over the chest, on percussion, is good: some large crepitation is heard by the stethoscope. The pulse is smaller and wiry. His bowels have been once opened. He is to continue his medicines, and to take arrowroot and milk from time to time.

Vespere.—He is much more comfortable: a metallic tube has been introduced into the trachea, through which he respire easily. His breathing is attended with but little noise. He has an urgent occasional cough, which is relieved by expectoration of tough mucus, partly through the tube and partly by the mouth. His bowels have been opened five times. His pulse is above 100, small, and sharp; his tongue is clean.

Opii, gr. $\frac{1}{2}$, statim; et adde sing. pulv. Opii, gr. $\frac{1}{3}$.

26th.—He has passed a good night, sleeping a good deal. The pulse is more tranquil and natural. His tongue clean and moist; his countenance is greatly improved; he has had three stools. An opiate enema was administered. In other respects he is the same as at the former report.

27th.—He has had a good night. He speaks better, but he does not breathe more easily through the natural passage. His gums are tender, and he has the mercurial fœtor. The calomel is to be omitted.

28th.—He is going on well, and his countenance is more natural. A larger tube has been inserted.

29th.—He is improving: the tube has been out for about an hour, and he breathes easily through the wound, which is suppurating. When the opening is closed, he soon begins to be distressed; though he seems to breathe better through the natural passage than he did. The fits of coughing have been less frequent and less violent, and the expectoration less viscid. He asks for more food. The act of swallowing is more easy, but it still produces a little coughing; and a small quantity of the fluid which he takes still passes occasionally by the wound. The pulse is 82, of moderate strength; the bowels are open; his gums are very tender. He is to have three eggs a-day, beat up with his milk.

30th.—He has passed a bad night, with much coughing and

expectoration. The tube, by some misunderstanding, has been left out since yesterday morning. A portion of his liquid food still appears occasionally at the wound. The bowels are open; his gums tender; the pulse as before. The tube is to be immediately replaced.

31st.—He has been more comfortable since the tube was replaced, and seems to be much in the same condition as before its removal, except that his pulse is rather more frequent.

Nov. 6th.—The tube has been out since the 3d, and he has continued to breathe comfortably through the aperture, which is contracting. He breathes partly through the mouth, and can bear to have the wound closed for a little time without inconvenience. His gums are still tender. He sleeps well; his bowels are regular; his pulse is good, and his appetite keen. Occasionally a small portion of his food shews itself at the wound. He swallows much better, and seldom coughs after doing so.

16th.—He breathes through the natural passage, and the opening is completely closed. His pulse is 95. He is somewhat hoarse, and says he has a feeling of soreness in the wind-pipe internally, in the situation of the wound.

Sir Charles Bell began his lecture by remarking, that as it was early in the season, few of the gentlemen had probably advanced so far as to be familiar with the larynx by demonstration, and the older pupils would not be unwilling to hear a short recapitulation of the anatomy. He should therefore give a description of the larynx. This he did, first taking it as a piece of mechanism, consisting of cartilages and muscles, and then he dwelt upon the sensibilities with which it is endowed. It was, he said, a surprising circumstance, that this sensibility, which was a guard upon the passage to the lungs, and without which we would not have a moment's security to life, should become, from the circumstances to which he was about to allude, a cause of death: for if foreign matter lodge about the glottis, though it be quite too small to interrupt the passage, yet will it produce spasmodic stricture. If the morsel be interrupted in the pharynx, the glottis is spasmodically shut; if the surfaces hereabouts be inflamed, the

very air itself becomes a source of irritation and spasm ; and if ulceration should take place, or coagulable lymph be thrown out, it will cause death, more by exciting the spasm of these muscles than by producing actual obstruction. He then drew a contrast between the condition of the parts as we examine them in the dead body, and the actual circumstances in which we may have to operate. It would seem, he said, strange that he should recommend the exercise of the imagination in an art like surgery ; and yet some of the most dangerous precepts are to be found in books, because the authors have not set forth the actual circumstances, the scene in which the surgeon has to act, and the condition of the patient who has to suffer. At present he had no occasion to describe to his hearers the actual circumstances, or to excite their sympathies : they had seen this old man, after long suffering, sitting up in bed, incapable of utterance, looking round for aid, gasping for breath, and his hands abroad ; his face and neck flushed, and his eyes sparkling. “ You have witnessed,” continued the lecturer, “ the condition in which you have to operate in these cases. So far from being able to lay the patient down, or stretch out his neck, you have seen how the shoulders, sternum, and clavicle were raised, the head drawn down, and the cartilages of the larynx squeezed together by their muscles. But most of all, it is necessary that you reflect upon the condition of venous turgescence, and, indeed, of arterial action too, which characterizes the parts. I am reminded of this by a circumstance which you see stated in the case : the skin was pinched up and cut across, and this was immediately followed by streams of arterial blood from both sides of the wound. If I had cut upon the thyroid gland, you would have been able to tell me whence this blood came ; but these arteries did not belong to branches of the third, fourth, or fifth degree of minuteness—they are not known in your anatomy—they are merely cutaneous vessels ; and yet you saw that they both required the ligature. This should teach you to be very observant of the circumstances in which you operate : and you would do well to remember that the veins bleed with unexpected profusion, in consequence of the difficulty of the return of blood into the chest during this condition of obstructed breathing.

There cannot be a greater proof of the suffering and anxiety of a patient with impeded respiration, than the readiness with which he submits to the operation ; since it is one which must appear to him of the most desperate nature, and which he has heard of only as the certain means of death. Again : you have seen what has always appeared to me a remarkable phenomenon ; no sooner is the breathing made free by your operation than the patient falls asleep. This man, although half a dozen candles were close to his face, and we were, with bloody hands, still actively engaged in providing for his safety, fell sound asleep. Can there be a better proof of his long-continued struggle than this ? Can there be a better instance of the value of our profession ?

Sir C. Bell then made a distinction of the cases for which this operation requires to be performed.

In the present instance, where there is no accident, or drawing in of a foreign body into the windpipe, we have to ascertain where the disease is seated ; and you may have perceived how my excellent colleague was desirous, by percussion of the thorax, to find whether the lungs were affected, or were in any measure the cause of the patient's very obvious distress. It has occurred that the operation has been performed when the impediment to breathing was below the part operated on ; and the suffering has thus only been aggravated. The disease in the tube may be venereal ulcer, or scrofulous ulcer and abscess about the cartilages of the larynx ; or cynanche laryngea, or cynanche trachealis. The inflammation may have subsided, leaving an œdema of the membrane of the larynx, which is in danger of choking the passage : and all these circumstances are important, since the success of the operation will depend on the temporary nature of the obstruction.

Perhaps the most important question that you can entertain, regards the time when the operation is to be performed. I have known it repeatedly happen that the medical consultants have delayed the operation, in the expectation of the circumstances of the case more distinctly vindicating the propriety of their decision. Observe, then, how a disease which is local at first, extends its influence to the lungs themselves.

The spasm in the larynx, and the laborious respiration, are, at last, attended with effusion into the lungs. Either the mucous secretion in the bronchi is increased, so as to impede the entrance of the air, or the effusion into the cellular texture of the lungs compresses the bronchial cells: however this may be, the effect is but too obvious; we see it in the common inflammatory croup, that the child, which is at first struggling with an obvious difficulty of breathing, and with the face flushed, lies, after a certain time, more composed, with less frequent cough, and with cheeks pale and cold. If in this condition the larynx or windpipe could be relieved, it would avail nothing; the child would not recover; and so I have known the operation delayed in an adult who had cynanche laryngea, until coldness and indifference characterized the condition of the patient; and when the operation of laryngotomy was performed, there was not even a temporary amelioration produced.

On the 17th the subject was renewed, on coming down from the visit to the patient.

You have again seen this man, reduced somewhat and pale, and his voice more raucous than natural, but otherwise perfectly well, and only desirous for more food. The opening is closed; in short, he presents such a contrast to his former condition of agitation and suffering, as must interest you in the practical question. It now appears to have been a case of inflammation of the larynx; and it is possible that much of the difficulty of breathing may have proceeded from cedematous swelling of the membrane. The case naturally recalls to my recollection some other occurrences. Some time ago a man lay in Hertford ward with a disease in the head of his tibia. There was reason to believe that his pains were syphilitic; and you are aware that when this disease has thoroughly affected the bones, mercurial action should be slowly raised, and long continued. He was attacked with mercurial erythema; and, as frequently happens, a blush in the pharynx shewed the sympathy of that surface with the general condition of the skin. As soon as this was observed, the treatment was immediately changed; but a night or two after, he was seized with suffocation, and the house surgeon being raised

from bed, thought to relieve him by bleeding. The patient died before the morning. Now, although such treatment might account for his death, in the lowness and faintness that accompanies the mercurial action upon the system, yet it appeared from the condition of the membrane of the glottis, as disclosed upon dissection, that we might ascribe his death, with more probability, to the serous effusion and gorging of the membrane of the rima glottidis.

There is another subject which it is my duty particularly to press upon your attention. Many of you must recollect the young woman who lay opposite to the door in Northumberland ward ; she was subject to disease apparently of the kidney and bladder, but may have struck you more, perhaps, as being a remarkable example of aphonia. She could not produce the slightest tremor in speaking ; her whisper was so low, that it required the nurse to put her ear close to her lips ; and what gave unusual interest to her case was, that she had had the operation of laryngotomy twice performed on her. She must have been attended by a ready-handed surgeon ; for besides this, she had suffered extirpation of both amygdalæ. Now, this girl one night had an attack of difficulty of respiration, amounting almost to suffocation ; but this was removed by giving her ether and opium. She had, besides, other symptoms strongly characteristic of hysteria ; and I confess to you, that my conception altogether of this case was, that the operations had been performed without necessity. I remember to have been sent for to perform the operation of laryngotomy in a woman, whom I found struggling in an hysterical paroxysm. The next morning she breathed and spoke perfectly well, but could not pass a drop of urine. Now, these are circumstances occurring under your own eye, which I have no doubt will persuade you that discretion and the power of discriminating, are above every thing necessary in the practice of your profession. And here let me point out to you a paper in the last volume of the Medico-Chirurgical Transactions, by Mr Wood, as conveying a great deal of information upon this subject, and as an example to you. He had been well educated in anatomy and pathology ; but not satisfied with that, as has been too much the usage here, he has had

recourse to books, and has furnished us with a paper well supported by authorities and sound argument. This is becoming in young men when they write on practical subjects; and nothing can be more ridiculous than the contrary mode of proceeding—when you find men, in the first years of their practice, dictating to the whole profession. You will hear with regret that this young author, who promised so well, has very lately died of cholera.

Let me now say a few words upon the operation. The perforation of the tube in this case was made in the membranous space between the thyroid and cricoid cartilages; but I must acknowledge, that when there is disease in the larynx, it would be well if the operation could be performed lower down. Let us not, however, conceal from ourselves the difficulty of doing this. If you cut upon the fore part of the trachea, you have a deluge of blood from the thyroid gland or guttural veins; and you must suspend the operation or use the actual cautery; and unless this precaution be taken, that may happen in your hands, which has happened again and again, that the patient has been suffocated—drowned, I may say—in his own blood. After reading the case, I need not point out to you how much the sternum is elevated, and the larynx drawn down—how the trachea is sunk, or drawn backwards—how deep and confined the whole space is; and it is these considerations which suggest to me a slight change on the mode of operating. If you see reason for operating lower than the part perforated in the present instance, instead of cutting with the knife carried longitudinally on the face of the trachea, where blood flows at every touch, clear the convexity of the cricoid cartilage, and keeping close to its surface, the firm cartilage being your guide, separate the soft parts, pushing them downwards off the front of the tube. Having done this, perforate, with the knife transverse, between the cricoid cartilage and first ring of the trachea. If blood should be in the wound at this time, it will not be drawn into the windpipe, because the slit which you have made in the tube is not open. Through that slit I would have you introduce the canula; but to do this the canula must be prepared. To have a sharp stilette in it is not without danger; for you must recollect that it is on record, that, in

attempting to perforate with the trocar and stilette, the trachea has been transfixed. This is a thing not easily comprehended whilst you study these parts in the dead body, but witnessing the difficulty of doing the operation in the living body, you may conceive it possible. The canula must have within it either a conical piece of wood, or a bougie, which shall pass easily into the slit, and convey in the silver tube ; or the tube itself must be cut obliquely at the further end, so as to slip into the perforation ; which latter mode is much to be preferred, because the instant it is introduced there will be relief ; whereas by using the trocar with the stilette, there is a temporary obstruction of the windpipe. When a tube is introduced into the trachea further down than this, and retained there for some time, the ring above the perforation is pressed inwards, and made convex toward the calibre of the tube, so that there is a permanent straitening of the windpipe at that part ; and this, I conceive, will make it difficult, in the event of present success, to withdraw the tube and restore the natural respiration. In the manner of operating which I have suggested, the greater firmness of the cricoid cartilage will prevent this indenting of the upper edge of the perforation. I always hesitate to recommend what I have not actually done, for unexpected circumstances present themselves. I return, therefore, to the consideration of the operation as you have seen it performed. When the membranous space between the thyroid and cricoid cartilages is opened by a crucial incision, upon holding aside the integuments, the patient at once breathes freely. This is of the utmost consequence ; it immediately gives him composure ; he recovers from the deep struggle which has perhaps too long continued ; and the relief is so perfect that he falls asleep. Now this is so essential a benefit, that we must not resign it without very deep consideration. If, for example, on perforating lower down, the inner membrane should exhibit a degree of irritability at all equal to what you saw in the present instance, you would not be able to give the patient relief—certainly not that immediate relief which is required, and only by cutting out a portion of the cartilage. With regard to the effect of this removal of a portion of the cartilage I speak with some hesitation ; but it

has occurred in this hospital, when the windpipe has been cut by the suicide, that the cartilages have retracted. An unfortunate girl, determined on destroying herself, put a penknife into the centre of her throat and cut downwards, dividing the rings of the trachea ; she lived several weeks, and on her death the trachea was found very much diminished in its calibre, by the curling in of the cartilages. If we make the incision longitudinally, without taking away a portion of the cartilage, we cannot expect that the patient can have that relief which we have seen given in the present instance, unless we introduce a tube. Holding up the chin and stretching the neck would not tend to open the slit which you have made in the windpipe, but the contrary ; whereas you have seen that in perforating above the cricoid cartilage, by holding apart the integuments, and stretching the neck, the patient was remarkably relieved. The snipping away of the angles left by the crucial incision in the membrane, is not so likely to be permanently injurious as taking away a portion of the cartilage, which is essential to the mechanism of the tube, and for preserving the freedom of the passage. The same observation does not apply to the cutting of the cricoid cartilage ; but you will remember that it was not my intention to cut through that cartilage ; for as it is a continuous ring, and firm at the back part, it would not have opened out : my object was to notch it, and to enlarge the membranous space. It is, perhaps, just as well that the ossification of the cartilage, and the irritability of the membrane within, prevented my accomplishing this, since the recovery has, in all probability, been the more rapid.

Case of Enlarged Tonsils in a Child—Laryngotomy—Excision of Tonsils.

Wm. Flannagan, aged three years and a half, was admitted, Dec. 6th, for enlarged tonsils, causing occasional paroxysms of difficult breathing. Owing to the child's crying, and resisting examination, it was not easy to see into the back of the throat : but it was ascertained that the tonsils were large, and lodged deep in the fauces, and that they presented a considerable swelling on each side of the neck. The breathing was

thick, the child keeping his mouth open. It is reported that it is during the night that the attacks of difficult breathing principally come on. His health does not appear to have suffered much.

He was treated for some time with iodine taken internally, and blisters applied to the neck. During this course he was always found playing about the ward, as if he suffered no inconvenience from his complaint. But it was more than once reported by the nurse, that he had been seized during the night with some fits of difficult breathing that alarmed her, and made her fear that he would be suffocated.

9th January.—In Mr Tuson's absence, the patient came under the care of Mr Shaw. Finding that he had passed a worse night than usual, it was resolved to attempt to remove one of the tonsils. But in proceeding to do this, it was found impossible to get a clear view of either of them. This was partly owing to the tonsils being situated low and concealed by the tongue, but also to the quantity of mucus that filled the back of the throat, and which could not be expelled by the efforts of the child. Besides, from being obliged to force the jaws open, the child cried; and he was then seized with fits of coughing, which added continually to the mucus in the throat. Nothing was therefore done; but he was ordered to have successive emetics, with the view of clearing the fauces, in order that the attempt at excision might be renewed on the following day.

10th January.—Mr Shaw succeeded, without much difficulty, in removing a portion of the right tonsil, about the size of the last joint of the forefinger. This was accomplished by seizing the tonsil, near its base, with the tenaculum, drawing the enlarged body forwards, and cutting out the tenaculum with the part it embraced, by means of the probe-pointed curved scissors. It may be noticed, that the vomiting by the emetics had had the effect of clearing away the accumulated mucus. In fixing the tongue, and holding it forwards and downwards at the same time, the scoop from the lithotomy case was found very useful.

13th January.—The child appeared to have suffered no ill effects, but, on the contrary, to have derived benefit from the

operation. He had no recurrence of the attacks of difficult breathing at night ; and he was seen to-day, at the usual visit, looking better than at any previous time. But a little after lecture (at half-past three o'clock), Mr Shaw was summoned to come with all haste to the hospital, as it was reported that the child was being suffocated.

He was found in the arms of the nurse, breathing with great difficulty, his face pallid, wax-like, and dark about the lips and eyes. When Mr Shaw arrived, it was thought that he had rallied a little, owing to the house-apothecary having induced some vomiting by a feather in the throat. A warm bath was speedily procured, and further efforts were made to get him to cough up the mucus, but this was attended with little success. He was watched for nearly an hour, when it was obvious that torpor and coma were increasing to a dangerous degree, while his breathing did not decidedly improve.

Mr Shaw therefore proceeded, with the assistance of Mr Arnott, to make an opening in the larynx, by cutting through the crico-thyroid membrane and removing a portion of the cricoid cartilage. The incision was a little more than an inch in length. Considerable venous hæmorrhage continued to take place while cutting down upon the membrane ; and this necessarily obscured the bottom of the wound. In consequence of the difficult breathing, the chest was elevated and the neck shortened, which caused the larynx to be not only drawn close to the sternum, but situated much deeper than natural. Again, in consequence of the larynx constantly changing its place, being sometimes drawn powerfully upwards and then immediately depressed to the same extent, it was necessary, in laying bare the membrane, before perforating it, to follow its motions with the finger, and to cut with the point of the knife, guided by the finger. The situation of the membrane was recognised by feeling for the notch in the upper border of the thyroid cartilage, and making allowance for the narrow interval, in the larynx of the child, occupied by cartilage, between the notch and the membrane ; and then, by feeling the prominent ring composing the fore part of the cricoid cartilage below. (The operator, it may be remarked, would be foiled if he expected to find a prominence in the thyroid cartilage at

this age, answering to that of the *pomum Adami* in the adult.) It was observed, in clearing the surface of the membrane, that occasionally a portion of the thyroid gland started into the lower part of the wound, so as even to obscure the membrane ; and this was apparently produced by the gland being squeezed into the space by the violent action of the muscles embracing it on both sides, and which pressed its lower part against the remains of the thymus gland and the fascia, occupying the superior opening of the thorax. After the crico-thyroid membrane had been sufficiently exposed, a little time was allowed for the hæmorrhage to subside, before inserting the point of the bistoury into it. A longitudinal incision was made, extending through the membrane and the centre of the cricoid cartilage. A slight cut was then made transversely along the lower border of the cricoid cartilage on each side, so as to liberate it somewhat before snipping off portions, both of it and the membrane, with the scissors. Considerable difficulty was experienced in removing these portions, owing to the remarkable sensibility of the mucous surface of this part of the larynx ; for, before using the scissors, it was necessary, of course, to raise the angle which had to be cut off, and this could only be done by transfixing it with the hook from within : but so great was the sensibility of the membrane, that whenever it was pierced, a fit of coughing, attended with a gasping and struggling, as well as a rapid motion of the larynx, was the result. When, however, after some ineffectual attempts, the portions intended to be cut away were removed, the orifice was of a size sufficient to admit a tube as large as a writing quill : the child breathed through the orifice with ease ; but on an elastic tube being inserted into the wound, it brought on such paroxysms of suffocation that it had to be withdrawn. Retractors, made by doubling a catheter wire, and then forming a hook at the part where it was bent, were now applied to the two lips of the wound, and fixed behind the neck, so as to hold the wound open : but the child would not allow these to remain. Adhesive straps were accordingly substituted, the ends of which were placed close to the edges of the wound, and after having got a hold they were drawn backwards upon the neck, so as to keep the lips apart. These *

answered very well, and the child breathed softly and easily. A nurse was ordered to sit beside and watch him.

14th January.—A remarkable improvement is visible in this child: he breathes tranquilly through the wound: his countenance has a clearness and freshness that indicate the relief he has obtained. (It is no small mark of his amendment, that in one hand he holds a goodly slice of bread and butter, while in the other he has a boiled potato.) He is occasionally troubled with a slight cough.

16th.—There was some alarm last night, from his being threatened with a recurrence of his difficult breathing. This appears to be brought on by his drooping his head when sleeping, and thus closing the orifice of the wound. From watching his breathing, it is supposed that he breathes both through the wound and the natural passages; but he begins to cry whenever the wound is closed for the purpose of ascertaining this, and his crying brings on a fit of difficult breathing. Mucus is still expelled from the wound. There is a constant hacking cough, apparently induced by the mucus collected at the upper part of the larynx irritating the glottis, or perhaps kept up by the remaining enlarged tonsil being in contact with that part. The house-surgeon is instructed to introduce a tube into the trachea through the wound, if the symptoms be again urgent.

For the two following days the reports were favourable. The nurse stated, that when she filled up the wound, while clearing it of mucus, the child sometimes uttered a word or
* two.

19th.—His breathing is undisturbed; but he looks ill, and is pceevish. He has had purging, which has been checked by administering hydrarg. c. creta, with soda and aromatic confection.

During the following ten days, the child varied in his condition: sometimes he caused alarm by his laborious breathing and appearance of exhaustion; and at other times he was considerably better. From his feverishness, and having a running at the nose and cough, it was concluded that he had influenza superadded to his original illness. He derived

benefit from the saline mixture, prepared with an excess of acid.

30th.—The wound, after narrowing daily, is closed, and covered with a moist crust.

Feb. 7th.—There is now a gratifying change. The cough is almost gone. The countenance exhibits an appearance of health. He plays with the other children in the ward. The swelling caused by the enlarged tonsil on the left side is scarcely discernible. The wound is nearly cicatrized.

Feb. 21st.—He was dismissed.

March 14th.—The mother brought her child again to the hospital, requesting to have another operation performed, as every night, when he fell asleep, fits of suffocation came on that kept her in continual alarm. Notwithstanding this account, he is in better health than when he left the hospital. On examining the left tonsil, it was seen to present a little above the tongue, and it was shifted somewhat towards the right side.

20th.—Hitherto nothing has been done, as there have been some reasons for supposing the attacks of spasmodic breathing to be owing to whooping-cough. He has been taking rhubarb and soda, with a grain of extract of hyoseyamus, twice a-day. He has always been found running about the wards during the day; but for several nights he has disturbed the patients by the noise he makes in breathing, and by his fits of coughing.

21st.—To-day, Mr Shaw removed, with the tenaculum and scissors, the greater part of the remaining enlarged tonsil.

April 1st.—No unfavourable consequences resulted from the operation. The breathing is no longer accompanied with noise or spasms, as before; and he sleeps soundly.

He was dismissed to-day, cured.

Lecture on Œsophagotomy.

GENTLEMEN,—Coming from the operation that has just been performed, you are naturally anxious to understand the necessity for it, and you are entitled to know what is passing in the surgeon's mind.

Here is a practical question, and you must approach it, by bringing to your recollection the structure and function of the parts ; for believe me that there is no studying even that which you may call a practical subject, without laying a foundation in the knowledge of the proper functions of the organs concerned.

When speaking of laryngotomy in a former lecture, I alluded to a point to which I must now recur. There are certain sensibilities situated in different parts of the body, unlike the common sensibility of the surface, and unlike the sensibility of the different organs of sense : these are given for the purpose of drawing into combination or sympathy a variety of muscles, some of which may, perhaps, be placed in distant parts of the body, but the combination of which is necessary to the performance of a certain act. The act of swallowing is one of these ; and if there were not a sensibility situated in the pharynx, controlling the respiratory muscles, and bringing on a succession of involuntary actions in the pharynx, œsophagus, and diaphragm, you certainly could not swallow without suffocation. Observe, then, what takes place in the act of deglutition. By an act of volition you move the morsel in the mouth, by volition you thrust it back into the pharynx, and the moment that it passes the arches of the pharynx, the constrictor isthmi faucium and the palato-pharyngeus act together, and seize upon the morsel. This, you will observe, is the first act of an involuntary operation : the muscles urge the morsel into the superior constrictor of the pharynx ; then, in succession, into the middle and inferior ; which places it under the grasp of the tunica vaginalis gulæ : and even now the morsel cannot descend unless a relaxation takes place in the fibres of the diaphragm, through which the œsophagus passes. The moment that the morsel comes under the action of the constrictors of the palate, it is no longer an act of volition. The beautiful provision here is, that there is a sensibility drawing all these muscles into co-operation, which volition could not do : it is one of the instances in which a sensibility is placed in a part in order that certain muscles may be controlled, and act without the interposition of the will.

But there is another curious part of this function, which is

the sudden and absolute stopping of all action in the muscles of inspiration. If the breathing went on at this time, of course the morsel would be drawn into the larynx, and suffocation would be the result. The curious thing worthy of admiration as proving design and benevolence is, that while one set of actions is excited by sensibility, another is totally stopped. Then here is the very point for your consideration ; you perceive that if the morsel be stopped in its descent, inspiration must be suspended, and suffocation follow, as certainly as if the morsel plugged up the opening of the glottis.

Now, taking this as the principle upon which we are to examine the facts before us, give me your attention to the following circumstance. In passing the waiting-room, some time ago, I heard a great noise, a very voluble tongue, an Irishwoman scolding ; not drunk, but worse than drunk ; in that state of violence, almost madness, which long-continued indulgence in tippling produces. This woman had a piece of meat sticking in her throat, and my observation was a natural one, that she could not be very ill if she could speak so loud and long, but that it was right to take her into the hospital, and not to lose sight of her until she was relieved. She would not remain in the house. She went out, but was brought in again in the evening much worse, and she died in the middle of the night. Upon examining the body, a large piece of meat was found, not in the pharynx, but thrust out of the pharynx, and lodged betwixt it and the spine.

[The case was here read. It appeared that this woman was nearly choked whilst sitting at dinner ; that to relieve herself, she pushed the handle of her knife down her throat with great violence, and that the knife was wrested from her by force. After this she got the assistance of a surgeon, who passed a probang into her throat ; and then, not feeling relief, she came to the hospital. The probang, with the sponge, was passed repeatedly, with great ease, into her stomach. When brought a second time into the hospital, she had difficulty of breathing, which she had not at first. This oppression and difficulty of her breathing increased during the night, attended with emphysema of the neck, and towards the morning she died. On dissection, a rent was found in the pharynx at its

lowest part, and a tough piece of meat was lodged out of the pharynx, and anterior to the spine. Effusion extended down the tract of cellular membrane along the œsophagus into the chest, and both cavities of the chest contained a large quantity of serum.]

The first observation that I will make to you, gentlemen, is to think of what you ought to do on common occurrences, and not always to contemplate such horrible consequences as you have seen to-day, or as you have heard narrated in this case. When a person has a piece of gristle or beef sticking in the pharynx, and choking him, you know that it is situated high in the pharynx, because it does not choke the person unless it be nearly in contact with the glottis, or epiglottis. Now observe the consequence of this, that when a person is actually choking from a piece of meat in the pharynx, you can reach it with the finger. You can with the point of the finger, which is the best probang, unfix it, and then the natural action of the parts brings it all up. That is a common occurrence, and it is best to avoid instruments; and let me here remind those gentlemen who are leaving town, that they should not incur much expense in surgical instruments, except in the department of forceps. Pick up what curious instruments of this kind you can, and carry them into the country; you will always find a use for them. I mean such forceps as are applicable to the natural passages.

Here is a case which strikingly illustrates the propriety of the rule to endeavour first to bring the body up that is impacted in the œsophagus. There is a danger in thrusting the body downwards, because you may fix it so firmly that it cannot be got out. In this case it does really appear that there was a degree of violence done which no surgeon could be capable of; and accordingly the narrative states that the friends by force took the knife out of the hands of the woman, with which she was thrusting the morsel down her own throat. I told you that she was crazy with drink. The morsel then was thrust through the loose fibres of the pharynx, out of the funnel-like part, and through the fleshy columns, and it was lodged in the cellular membrane, between the pharynx and the spine. It appears that a passage was made nearly as far

as to the subclavian ; but it does not follow that this was by the introduction of the probang ; the probang passed down freely—there is no proof that it was forced at all ; on the contrary, that which produced the obstruction was out of the gullet, and the instrument passed freely down. What, then, was the cause of death ? That is an important question.

When once you make a breach upon the pharynx or the œsophagus, every time that the patient attempts to swallow, a portion of food or fluid gets into the opening and breaks its way into the cellular membrane. You remember perfectly well that there is a loose texture of cellular membrane extending all the way by the side of the œsophagus into the mediastinum, so that, without presuming any error on the part of the medical attendants, the fluid which the patient drank might escape from the rent in the pharynx, and so work its way down the cellular membrane, even to the loose texture of the mediastinum, and within the chest itself. I am not speculating ; I have known such a circumstance happen ; I have found fluid that was swallowed, in the cellular membrane of the mediastinum. I fancy, then, that this is the key to the whole case ; that it was not the first violence that killed the woman ; that it was not the obstruction in the œsophagus that directly caused suffocation, because the portion seemed to have been removed from the neighbourhood of the windpipe ; but on dissection it appeared that there was inflammation enough of the neck, thorax, and lungs, to account for the effusion into the cavity of the thorax ; and from these secondary effects she must have died. The emphysema in the neck confirms this, for the air did not come from the lungs ; it must have been propelled from the pharynx into the loose cellular membrane, during the act of swallowing.

The next circumstance in the history of the occurrences of this hospital, and it may be in the recollection of some of you, is that a man was brought in with a bone sticking in his œsophagus. In the last case it was a piece of gristle or a piece of beef ; in this it was a bone of a sheep's tail. Observe the effect : the bone stuck in the œsophagus, and at last ulcerated into the trachea. Now you will see what was passing in our minds with regard to the child that has just been operated

upon—that there is danger of a piece of bone, which has become fixed in the gullet, ulcerating into the air-tube. The patient to whom I have just alluded died in consequence of the bone having stuck in the œsophagus, and then made a hole by ulceration in the trachea.

The next instance on record (all these cases occurred within a short period) is that of a man who was brought in with a piece of meat sticking in the pharynx, and causing suffocation. In this case the house-surgeon performed laryngotomy ; but it was too late—the man did not recover. When I enquired why efforts had not been made to extract the body through the mouth, I learned that the teeth were firmly clenched during the short interval that the patient lived.

Now these are circumstances that bring us to reflect on the condition of this child. In the present case, which has no doubt interested you in the highest degree, you find that the patient is only two years and three months old. The mother brings the child ; she is in great alarm, but the child not apparently suffering much. The mother says that she has been accustomed to give her child a bone to pick. “ I gave him,” she says, holding up her hands above her head with the utmost agony, “ a mutton bone with some meat upon it, expecting him to pick it, and he swallowed the whole, since which time he has not been able to swallow any thing solid, only a little liquid.” The child breathes freely ; he can swallow soup or milk, but he cannot swallow any thing solid. Attempts have been made to extract this body, first by the house-surgeon, and in succession by the surgeons of the hospital. The body can be touched by the point of the finger ; it appears to be lodged to the right of the glottis, and fixed in the membrane of the œsophagus. We can just touch a sharp point with the finger, and on any attempt being made to catch it, it escapes and descends lower. A variety of instruments have been tried—the hook of the probang, the crane-bill forceps, and twisted wire made into a hook ; and instruments of various construction have been forged for the purpose of unfixing and hooking this piece of bone, but all without effect. Four weeks have elapsed since this unfortunate accident, and a consultation was with much propriety held upon it. The

result of this consultation was, that the child could not be permitted to remain in this hazardous state, that he might in an instant be suffocated, and we should have to blame ourselves, not certainly for indifference, but for inactivity.

It appeared that this sharp, ragged, abrupt piece of bone, could be felt; and it further appeared, that, if it were permitted to remain, ulceration would take place. Now ulceration, I repeat, into the pharynx would have produced this effect—that whenever the child was fed, a portion of whatever it swallowed would be received into the ulcerated hole, and, gradually, a bag would have been formed there. This would be the effect of the ulceration of the pharynx merely; but what would be the result of ulceration into the trachea or larynx?—suffocation; for when ulceration takes place in the larynx, there is such a degree of irritation produced that the person is suffocated. For example, when there is an abscess outside of the larynx, and the abscess works its way by ulceration into the larynx, the person is suffocated; not by the quantity of matter thrown into the windpipe—no, that is not the cause; but by the inflammation attending the ulceration, and the consequent irritation increasing till spasm of the glottis produces suffocation. I trust, then, that nothing more need be said to carry you with us in determining upon the propriety of this operation.

You have seen the nature of the operation, and it must have impressed the conviction on your minds that it is one not to be lightly undertaken. You have seen the parts in which the incision is made, and the depth to which it must be carried, and you are aware of the hazard of the operation, unless there be a very intelligent and active surgeon, and that surgeon well seconded. With regard to the operation itself, what I suggested was, to make an incision upon the margin of the sternocleido-mastoid muscle, then to pass the director under the platysma myoides, and slit it up; next, with the handle of the knife, to dissect between the larynx and under the sternocleido-mastoideus, and to cut very little there with the edge of the knife. When the margin of the sternocleido-mastoideus was turned aside, I recommended that Weiss's forceps for the urethra should be passed from the mouth into the pha-

rynx, and that it should be brought round so as to push out the pharynx at the incision ; which I had done formerly myself with great ease, owing to the yielding nature of the pharynx. By cutting deep without this direction you run a great hazard ; while, by passing the instrument into the mouth, you can bring the part quite up above the margin of the wound. You will observe the advantage of using this kind of forceps ; for when the surgeon has cut upon the end of it, and brought it out at the wound, he has only to open the forceps, when the wound of the pharynx dilates easily ; and then, putting the finger betwixt the blades, it can easily be carried into the pharynx.

Though one cannot but feel a good deal during the delay of an operation, when it is over I reflect upon it as an advantage to you ; for there is nothing of which I am more afraid than that you should consider such operations as slight matters, and easily performed. When you see an operation done speedily, and without hesitation or seeming difficulty, you are betrayed into the belief that it is easily done, and perhaps the difficulty occurs only in your own practice. You have seen the operation performed with every proper precaution : you have seen the necessity of taking up arteries, branches of the superior thyroid (you are anterior to the sheath of the carotid, and above the bend of the inferior thyroid) ; you have seen the operation, in short, performed in a manner that you may safely imitate. You must have noticed that the incision must go very deep, unless you use the precaution of introducing an instrument that may serve as a directory from within. A catheter was used for this purpose, and you observed the manner in which the operator proceeded. When the point of it was cut upon and brought out, he took hold of the end with the blades of the forceps, and then drawing the point of the catheter back into the pharynx, the forceps were carried along with it. By expanding the blades of the forceps, he made room for the passage of his finger, and in this way, as you might have observed, there was no occasion for much cutting of the pharynx. The opening was made just at the termination of the pharynx and the beginning of the œsophagus. On introducing the finger here he felt the bone sticking firmly ;

and, using the polypus forceps, he grasped it, and brought it out—a sharp, quadrangular portion of bone, the spinous process of a vertebra.*

Now I trust that the child will do well, and that it will shew us all the happy results of good surgery ; but do let me impress this upon you, that the operation has not been done without great anxiety on the part of the surgeon, and an absolute conviction of its necessity.

There is one other point, connected with this operation on the pharynx—the formation of a bag. You must reflect upon this. There are two ways in which the cul de sac, or bag in the pharynx, is formed. One is, when a little ulceration takes place in the pharynx, and a portion of each morsel that is swallowed is urged into it. In the course of time, from these minute deposits, the ulcerated spot becomes a bag—a bag which makes its way behind the fleshy columns of the constrictor pharyngis ; and unfortunately it happens, that from the portions of food being deposited there in succession, a little and a little at a time, the bag at last acquires such a volume as to compress the œsophagus, and to prevent deglutition. This is one of the most difficult cases to treat, if it ever has been well treated. But there is another way in which a bag may form. The pharynx and the œsophagus are subject to extraordinary attacks of spasm, and in hysterical women especially. You will have the voluntary act of deglutition opposed to the involuntary act ; that is to say, the person will attempt to swallow, but the involuntary act will not follow the attempt, and consequently the pharynx becomes enormously distended, the morsel not being sent down. Dilatation of the pharynx is in this way frequently made, and a portion of the inner membrane is at last thrust between the columns of the surrounding muscles, precisely as it takes place in the urinary bladder ; for when there is a sac in the urinary bladder, it is produced by the violent action of the bladder itself, thrusting the mucous membrane through the fibres of the detrusor urinæ, until a sac is formed. So it happens that a bag is formed of the inner membrane of the pharynx, which is thus thrust between the columns of the constrictor pharyngis : and then the unfortunate result takes place which

* See Mr Arnott's paper in the Trans. Med. Chir. Society.

I have described ; portions of the food are deposited there, and more and more gradually accumulates, until at last there is a bag crossing between the spine and œsophagus, and the person, if not relieved, dies of inanition. Relief in these cases is very difficult to be obtained ; because if you attempt to introduce an instrument, it is, just as the food, more apt to pass into the sac than into the œsophagus. We would say, do not let the person eat any more by a voluntary act, but be fed by a tube, so that the sac may not be filled ; but the difficulty of passing a tube through the right passage, and so as to avoid the false one, is so great, that if the patient continue to swallow liquids, it is still deposited in the sac, and there necessarily follows great ulceration, great mischief, and death attended with protracted suffering.

Now I touch upon this, gentlemen, because I wish you to observe what is the effect of any breach upon the surface of the pharynx, and why I am always unwilling to perform any operation upon the pharynx or œsophagus, either within or without. Of course, in the present case, attention will be paid that the food is not permitted to lodge in the wound.

Aneurism of the Aorta mistaken for Dysphagia.

“Robert Linan, 43 years of age, came here on Tuesday the 9th of December. He had not been able to swallow even a drop of liquid since the preceding Friday ; he is a little, spare, sallow man ; he speaks in a whisper, that conveys the idea of disease in the larynx. In May last he was admitted into the Physicians’ ward ; and he had difficulty of breathing, cough, and some hoarseness ; he got considerably better at the end of three months ; he had never spit blood. In the beginning of October he first felt difficulty of swallowing, and came here for relief. Two blisters were applied to the throat, and these almost immediately relieved the dysphagia.

“He has returned again. He lost the power of swallowing on Monday ; the difficulty continued with little abatement till Thursday. He appears to have taken almond emulsion, and vinum ipecacuanhæ, with some relief ; but he always found it necessary to take a little fluid after every solid mouthful, to get it to pass an obstruction just below the cri-

coid cartilage. On Friday he had eaten his dinner as well as usual, but at supper he found that he could not swallow even a cup of chocolate. Suffering no pain further than that of thirst, he allowed it to go on till Monday night, in the hope of its getting well of itself, and followed his usual avocations. At eight o'clock that night he came to the hospital, and had half a dozen leeches put on his neck. On Tuesday the œsophagus was examined with the soft wax bougie, but the instrument did not pass; and it was observed on withdrawal to be flattened on one side. He now attempted to swallow a little milk and water: it seemed for a little to be swallowed, but it brought on a fit of coughing; and after a little, a sort of eructation brought it all up again. He was sent into the ward. On inquiry, it was found to have been the belief that his disease was ulceration of the larynx, and spasm of the lower part of the pharynx. A solution of nitrate of silver, eight grains to the ounce, was applied with the sponge of the probang. After this he attempted to swallow some warm milk and water; it remained for a minute in the œsophagus, but soon brought on a fit of coughing, and then it was brought up by eructations as before. The pulse was getting weak for want of sustenance, and an injection of a pint of strong beef-tea was administered, after which he felt greatly refreshed. He had a liniment of camphorated oil and tinct. opii rubbed on the sides of his throat. He was furnished with some beef-tea, and Reid's injecting apparatus, to use in the night, as he was obliged to go home to attend on a helpless wife, who could not undress herself without his assistance. He returned in the morning very faint. He was now seen by the surgeon, who attempted to introduce an elastic catheter, No. 4 or 5, and after a little hesitation at the termination of the pharynx, it passed freely down its whole length. The precaution of passing the instrument through paper, and holding a lighted candle to it, was taken, lest by any chance it should have passed into the larynx. A mouthful of milk was now squirted through the tube. It went down, but there was evidently resistance; and on removing the lips the milk returned spouting from the catheter; this was again repeated with the same results. The catheter was withdrawn, and he attempted to swallow, but

in a minute or two the coughing and eructation came on as before, and what he had seemed to swallow returned. He was so weak that the fatigue of the operation made him faint. He was now put into the warm bath to relieve the thirst, which he said was such as almost to madden him at the sight of liquid. After the bath he was more comfortable than he had been since the attack began, and fell asleep. The linimentum hydrargyri was rubbed into his neck ; and he had some mucilage and tinct. opii, of which he was occasionally to sip a little, and to let it lie in the pharynx as long as possible. During the day he was nourished with frequent injections of beef-tea and mutton-broth. In the afternoon the bath was repeated, and attempts made with a small catheter similar to those described in the morning. The catheter was again passed by the house surgeon, but with no advantage ; it did not pass the stricture, which appeared to be in the commencement of the œsophagus. As he sat at the fire he brought up what appeared to be a piece of meat.

“ 11th.—This is the sixth day since a drop of liquid has been swallowed ; he does not complain of hunger, but of intolerable thirst. He says he has experienced great comfort from the mucilage and opium, which was the only thing that did not immediately bring on a fit of coughing and eructation. He has brought up several little pieces of meat, which look like shreds of boiled beef, which he spat up in the night. At half-past twelve he met the surgeon at the door of the ward in great joy, having at length succeeded in swallowing some milk. Beef tea was now given him, which he swallowed with considerable ease.

“ *Vespere*.—The nurse has been too kind to him, giving him more than his allowance of broth, which was ample ; the pulse is a little excited ; his thirst is still great, but he was ordered to take nothing more than a little nutriment, and to have a spoonful of castor-oil in warm milk.”

COMMENTARY.—I am sure this is a case that must go to your hearts. There can be nothing more touching than to see a man actually starving, and suffering from excessive thirst ; exhausted, misery in his looks, and absolutely fainting from inanition ; and the conviction at once arises in your minds that some-

thing must be done immediately. Now I do assure you that I came to the hospital that morning very uncomfortable in my feelings, expecting to find him worse, and that an operation of great danger and difficulty must be done for his life ; for I saw no alternative, although the circumstances were altogether new.

But there is a circumstance of interest—the rejection of a piece of meat like boiled and macerated beef or mutton. When this was ejected he had immediate relief, and expressed his thanks energetically, as if I had been the means of saving him. It seems somewhat strange that he should not have known of this sticking of the food in the throat until it was brought up ; and it is no less remarkable, that the rejection of these portions permitted him to swallow, by relieving the spasm in the pharynx.

The case, then, being represented to me, and having all the appearance of stricture, I said to the man, “ Now answer me distinctly this question, When did this extraordinary difficulty come on ? ” and he replied, “ On a certain day I swallowed perfectly well, and the next day I could not.” That does not look like stricture of the œsophagus ; for when there is real stricture, the person begins his narrative by saying, “ O ! I had always a very narrow swallow.” They invariably tell you that they have had a difficulty in swallowing large pieces, and a facility in swallowing liquids. When there is a spasmodic difficulty, it is the very reverse of this : a person can swallow a smooth morsel more easily than a few drops of liquid.

If we possessed eloquence, we should have no occasion for it in the present instance, because the legitimate object and use of eloquence is to prepare the heart for a certain impression ; to remove the prejudices which prevent us seeing clearly or reasoning justly ; and to fit us to understand and fully to appreciate a plain story told by a plain man. But I am quite sure that what you have lately seen in this hospital has opened your understanding, in the first place, to the importance of your profession ; and, more than that, to the severe and anxious duties that you have to perform. It is said that a General arranges his troops, and infuses into them a spirit of conquest ; but deep in his own breast rests the possibility of defeat, and for which he prepares secretly. So ought

a surgeon to go forward to his operation with the confidence which knowledge produces ; but in all capital operations he should also revolve, in his own mind, every possible disaster. Now you have seen an operation of great difficulty performed, and you have seen the most disastrous accident taking place during the operation, and you have witnessed, and must, I am sure, fully appreciate, that manly decision and vigour of mind which give calmness and promptness in these circumstances.

The first case I have to mention is one with which you are as familiar as myself ; and I know not what this gentleman whose pen runs so fast, may tell of us, for we have misunderstood the case sadly. The dissection is now before us, and we must acknowledge that we were wrong. "*Il n'est rien de tel que d'être honnête homme,*" say the gentlemen on the other side of the channel ; or, according to our homely expression, "*Honesty is the best policy.*" I allude to the case which we conceived to be an obstruction of the œsophagus by a piece of meat ; and I really think the explanation given by the house-surgeon is better than any thing I have offered—viz. that it was not a piece of meat, but a portion of compressed coagulum from an aneurism, which came up. You will no doubt examine the morbid parts carefully : they are before you. The poor man suddenly died ; some blood passed out of his mouth ; and upon dissection, his stomach was found full of blood. On further investigation, it was seen that there had been an aneurism of the arch of the aorta ; that the aneurism had come in contact with the œsophagus, adhered to, and ulcerated into it ; and there is every probability that what was brought up by the act of vomiting was a portion of the white firm coagulum that always forms in aneurism, and prevents the blood for a time from bursting out of the sac.

This being the case, we have some difficulty—and yet not much—in reconciling the symptoms with what you see now before you. For example, you remember I stated that I passed a tube through the part where I conceived the obstruction to be ; that I was much surprized, on injecting tepid milk into the tube, to find that it did not pass freely into the stomach ;

and that when the lips were withdrawn from the tube, the milk came spouting out of the tube again. Now, on dissection, it was found that there was a stricture, but of a spasmodic nature, just behind the larynx—such a stricture, that the point of the finger could not pass; but upon being pressed, the fibres dilated completely: implying that it was not a permanent, but a spasmodic stricture. The tube, it appears, had been passed through this spasmodic stricture opposite the cricoid cartilage; but when the fluid was injected, the aneurism mechanically pressed on the lower part of the œsophagus, and so the fluid distended the space between the mechanical compression below, and the spasmodic stricture above. This explains the filling of the throat, and why, as soon as the syringe was withdrawn, the milk returned by the tube.

You may infer, then, that the observations were not applicable to the circumstances of the case: yet, allow me to say, not altogether remote or foreign. I argued that the piece of meat sticking in the œsophagus had increased the spasm, the spasm occurring where there was no actual disease; and now we find that the aneurismal tumour, pressing on the œsophagus in the posterior mediastinum, was the formidable cause of obstruction, and of the spasmodic difficulty higher in the tube.

CASES OF HERNIA,

Illustrative of the Principles.

GENTLEMEN,—In the present and the preceding month you have witnessed the operation for hernia performed five times. As the occasion of doing your duty in these cases comes unexpectedly upon you, and especially requires decision, I am very desirous that you should not lose the advantages of these examples, but that, by mature reflection upon them now, you should be prepared, when it becomes your duty, to act with promptitude. It is one benefit of clinical instruction, that, by conversing with you as we pass round the wards, I learn on what to dwell when we are met here. I think I have observed that you mistake very much the importance of tobacco injections. That practice has arisen

in a physiological error, and is, I am of opinion, wrong in every view we take of it. The effect desired to be accomplished through it, is to produce debility, with the view of removing "spasm" from the stricture, and to withdraw the intestine by exciting the action of the bowels within. Now, before I proceed to my argument, I must acknowledge that the highest authorities in the profession, both now and heretofore, are in favour of the practice; which will make you weigh my opinions and yield only to conviction. In the first place, there is no such thing as spasm in the neck of a hernial sac. When you perform the operation with the knife, it is not muscle which you cut, and therefore it is not muscle which prevents the reduction of the bowel. As to exciting the action of the intestines within, you must observe that there is just as much danger to be apprehended from this practice as from too great pressure applied from without. If you have attended to the condition of an incarcerated and strangulated gut, you will know that there is a portion of the intestinal canal which is in danger from the sharp edge of the stricture pressing upon its reflected angle, and that there are these various causes of failure in hernia*.—1st, Abdominal inflammation, excited by the writhing and distention of the intestines above the strictured part. 2dly, Mortification of the intestines within the sac. 3dly, Rupture or ulceration of the gut opposite to the line of the stricture. All of these, but particularly the last, are sufficient reasons against augmenting the violent excitement of the bowel within.

Experience convinces me more and more, that the surgeon's practice in hernia must be determined, not by symptoms, but, after having ascertained that the distress of the patient does arise from hernia, by the touch—that is, by feeling the roundness, the fulness and hardness of the tumour, and the narrowness or *pinch* of the neck. You have here the reports of four operations performed in succession, and all attended with success. Now in each of these it was a small

* See a Clinical Lecture on Hernia, by Sir C. Bell, in Med. Gaz. vol. iii. page 104.

portion of the intestine that was down, and the stricture was, in all the cases, very close ; in short, after the surgeon's duty was performed, and the state of the parts ascertained, the opinion was universal, that nothing could have succeeded in reducing the intestines except the edge of the knife. Happily the patients were sent into the hospital early, without violence having been done by the taxis, and there was no delay in performing the operation after they were received. But, unfortunately, it often happens thus: the patient is conveyed to the hospital after a surgeon has done his best out of the house ; the house-surgeon makes his attempts, is unsuccessful, and sends for the surgeon of the week ; he next examines the tumour, attempts reduction, then orders a large bleeding, the warm-bath, stimulating clysters, and a consultation to be called. Now, with all this, there is too much delay. I hold it to be the duty of the surgeon to make his attempt to reduce the hernia with patience, gentleness, and perseverance: during this time, if he be an intelligent practitioner, and his experience be grounded on the anatomy, he will be better able to determine upon the propriety or the necessity of operating than twenty surgeons standing round the patient's bed, observant merely of the symptoms. And here is the advantage of character in an institution like this—that the patient does not object to the operation, or delay giving his assent, after the opinion of the surgeon has been declared.

To return to the subject of tobacco injections. One advantage I certainly see in that practice: it makes the patient very sick, and low, and cold, and he and his relations acquiesce readily in the surgeon's decision, seeing that there is all the appearance of approaching death. Nor must we omit to observe, that death has, on many occasions, been the consequence of the use of tobacco. The tobacco smoke is exceedingly unmanageable ; sometimes producing no effect, but sometimes unexpectedly bringing on lowness of pulse, fainting, cold sweats, sickness, and tossing and anxiety. In regard to the tobacco infusion, you will find that our authorities differ very much as to the quantity that is proper. Sir Astley Cooper has seen one drachm, in infusion, prove fatal ; while others employ two drachms, or even more, in decoction.

But my grand objection to the use of tobacco is the procrastination, and the admission that there are any means to be trusted to, compared with the taxis, or any thing to be done when that fails but the operation with the knife.

I must remind you, however, that in hernia, and especially in large herniæ, there is sometimes an opposition to reduction from the condition of the bowels within the abdomen. It is in such cases that the apothecary's practice—clysters and purgatives—may be of advantage: but when there is a small hard knob in the groin, let nothing come in competition with the surgeon's hand.

But let us proceed to our cases.

Femoral Hernia.

Case 1.—A. D., 64 years of age, mother of nine children, was admitted into Bird's Ward, on the afternoon of July 5th, with symptoms of strangulated hernia. A swelling was found in each groin; that in the right large, soft, of irregular form, yielding to the pressure of the hand with a croaking noise, but not entirely disappearing, and receiving a great impulse on coughing; that of the left side, the size of a large walnut, tense, incompressible, and receiving no impulse from coughing.—(No. I.) Neither swelling was painful: the first mentioned had existed for fourteen or fifteen years, she thinks it has never gone entirely up, and she has not suffered inconvenience from it; the last first shewed itself seven years ago when she was making some exertion, and has occasionally come down, but never until now having been more than an hour and a half down, but going up on pressure, and sometimes not reappearing for four or five weeks. Last night the swelling in the left groin reappeared while she was ironing, and as usual when it descended she was attacked with sickness and vomiting, which, as she did not succeed in reducing it, continued during the night; this forenoon she sent for a surgeon, who ordered her to come into the hospital.

For three hours subsequent to her admission she had no symptoms; then she was attacked with vomiting, and soon after began to complain of pain in the belly. The taxis being tried without effect, twenty ounces of blood were taken from

the arm ; and the reduction being again attempted without success, the operation was resorted to twenty-nine hours after the descent of the rupture.—(No. 2.) The sac contained a little reddish serum, a portion of omentum, and underneath this a piece of bowel, the size of a large cherry, of a dark red, almost chocolate colour.—(No. 3.) The stricture being divided, the gut and part of the omentum were returned. Immediately after the operation, a large enema of warm water was given, and two hours subsequently, ten ounces of blood were taken from the arm. Early in the following morning, the patient began to take small doses of sulphate of magnesia, and at noon she had seven grains of extract of colocynth, two of calomel, and three of extract of conium, in pill, which produced free evacuation from the bowels. In the evening, twenty leeches were applied to the abdomen. From this time, with the exception of some pain she one day experienced from an error in diet, and which yielded to one application of leeches and a dose of castor oil, she had not an unfavourable symptom.

(No. 1.)—I shall not detain you long here, but just remind you that you have, in this description, the distinctions marked which have been, rather incorrectly, called chronic and acute hernia. You see at once, that what is called the acute hernia results entirely from a mechanical cause : it is a small, round, hard tumour, which receives no impulse from within, owing to the closeness of the stricture : and you distinguish it from the large lax tumour, with an open or wide neck, through which the abdominal impulse is conveyed.

(No. 2.)—“Twenty-nine hours after the descent of the rupture.”—Gentlemen, you must put no value upon this fact ; it informs you of nothing. The mischief may be done in an hour as well as in twenty-nine hours. The lesson you receive is, that there must be no delay after the proper means have been tried to reduce the tumor.

(No. 3.)—This small cherry-like portion of intestine marks the condition of the greatest danger in hernia. After the constriction of the veins has produced this dark colour, secretion into the interior of the gut and effusion between the coats

come on very rapidly, complete the strangulation, and mortification must immediately follow.

Inguinal Hernia.

Case II.—James Turner, æt. 50: August 1. 1832. He has been subject to hernia for many years, but has always been able to return it when it came down: he has generally worn a truss, but latterly has not, on account of the spring being broken.—(No. 4.) The rupture came down yesterday afternoon, since which he has not been able to return it. He was admitted into the hospital at twelve o'clock this morning, previously to which he had seen some medical man, who tried the taxis two or three times, but without avail. The tumour was acutely painful, so that very little time was spent in trying the taxis; he said he had vomited frequently before he came into the hospital, but did not do so afterwards. His bowels had not been open since the rupture came down. There was pain in the abdomen, in the region above the hernia. A consultation was called, and the operation decided upon, and was immediately performed. An incision was made over the tumour, about three inches in length; and, after some dissection, the sac was laid open: it was found to contain a large quantity of fluid; some also came from within the abdomen.—(No. 5.) The portion of intestine that had descended was about six inches in length, and of very good colour. The stricture was remarkably small: it was divided upwards, and inclining rather outwards. One circumstance not attending the operation in general was, the acute pain which this patient suffered during the whole operation: dividing the different layers of membrane gave severe pain, as also did the division of the stricture. There was no omentum in the sac. The edges of the skin were brought together by two sutures, and a compress and bandage applied.—(No. 3.) A large enema of warm water and gruel was administered, which returned mixed with fecal matter. The bowels were twice open afterwards. He also took a calomel and opium pill every six hours; and a drink of barley-water, Epsom salts, and lemon juice. Towards evening there appeared to be more

pain in the belly, above the hernia, for which twenty leeches were applied, which relieved him.

2d.—He passed a good night ; the pulse was 64, and it has not risen since the operation ; the bowels have been open four times to-day ; the tongue is white, but quite moist. Towards evening, his pulse had increased greatly in strength, though not in velocity ; there was also a jerk in it ; he was bled to \bar{z} xx. after which it became soft and quite compressible. He complains of more thirst than he did.

3d.—His pulse has remained quite soft since the bleeding ; the tongue is moist ; the bowels have been freely open to-day ; in the morning there was a slight increase of pain in the abdomen, above the hernia. This was relieved by the application of sixteen leeches. The wound was dressed to-day ; there was a good deal of swelling and induration about the edges, extending about the spermatic cord.

4th.—There is no increase of pain in the abdomen ; his pulse remains quite soft, and tongue moist. The bowels have not acted very freely, and he had a dose of castor oil, after which they were properly opened. He did not sleep very well last night, so he had Tr. Opii \mathcal{M} xx. Aq. Ment. Pip. \bar{z} iss.

5th.—He did not sleep well. This morning he has more uneasiness in the wound ; he has no pain in the abdomen ; the pulse is quite soft ; his bowels are freely open. The dressings were discontinued, and a linseed poultice was applied to the wound.

6th.—He is doing quite well. There is no pain in the abdomen ; his bowels are freely open ; the wound looks better.

After this he had not a bad symptom. The wound continued healing daily, and by the 24th had completely cicatrized.

Remarks.—(No. 4.) You will remember that a person who has worn a truss, to the effect of nearly closing the ring, comes into a condition of great danger when the gut does descend. There is a narrowness of the passage, and a sharpness of the edge of the stricture, which gives to the accidental descent of the intestine all the characters of the “acute” hernia.

(No. 5.)—Your prognosis will be very much directed by

this secretion. A certain quantity of serous effusion is a necessary consequence of incarceration ; and when this is limpid, it is favourable. But we must distinguish the effusion into the sac from the serum which flows from the abdominal cavity after the reduction of the intestine. The latter implies that the viscera within the abdomen have suffered high excitement, and when it is in large quantity, it is a very unfavourable symptom. A case occurred during the summer, which no doubt you recollect, in a woman : when the finger was withdrawn, after reducing the intestine, the serum flowed as water from a cask. She died, and yet the intestine within the sac promised a favourable result. I remember a gentleman standing by, saying, “ Well, if that intestine does not recover, I do not know when we are to expect success ;” and I then pointed out to him the quantity of serum as the very worst symptom.

(No. 6.)—As to this pain from the cutting of tendinous parts, we cannot depend much on the expression of the patient. He certainly complained a great deal during the operation, but he was as remarkably merry after it. I do not remember to have seen a patient operated on, who was in actual danger, as this man was, of forcing all down again, by a hearty fit of laughing.

Femoral Hernia.

Case III.—S. B., 29 years of age, walked into the hospital on the afternoon of Sunday, August 12th, complaining of having had severe sickness and vomiting the two preceding days. Admitted by the apothecary into one of the physicians' wards ; that gentleman, on investigating her case, detected a small swelling in the right groin, and suspecting that this might have some connection with her complaints, he requested the surgeon of the week to see her. From her statement it appeared that she had noticed a small kernel in the situation just mentioned, for the last three years ; that, on the afternoon of Friday last, whilst she was occupied in her avocations as housemaid, she felt it get larger, and that soon afterwards she was attacked with severe twinging pain in the belly. A calomel pill, and some gruel which she took, were rejected by vomit-

ing. In the course of the night she had a scanty scybalous motion. On the morning of Saturday some pills and a draught were administered, but not retained; and some castor oil, taken at six in the evening, had the same fate. Since then, she has not vomited nor had sickness; her countenance is good, and betrays no suffering, and her pulse is natural. On examining the swelling, it was found to be little larger than a hazel nut, firm and unyielding, and receiving no impulse on coughing; free from tenderness, but occupying precisely the situation of femoral hernia; there was no pain or tension of the abdomen. The taxis being tried without avail, a large clyster was administered, and another attempt made to reduce the swelling, but with as little success. Although, therefore, no urgent symptoms existed, it was now resolved to operate, from the circumstances revealed in the history of the case.

On reaching the hernial bag, or fascia propria, this was so small in size, and some blood-vessels were so distinctly ramified upon it, as to occasion a doubt if it was not the bowel. (No. 7.) On opening the peritoneal sac a little bloody serum was evacuated, and then there was perceived a portion of bowel, not larger than the tip of the finger, of literally a black colour. The stricture was very tight, and on its being divided, about a couple of ounces of serum flowed from the cavity of the abdomen. The piece of gut was now returned within the abdomen, but it did not recede from the ring, being retained there by adhesions all round, which were not disturbed. A compress and bandage were put over the parts in the usual way, it being determined, however, that if clear evidence of mortification should take place, these should be removed, and the bowel probably opened. As this, however, had not taken place, and as very violent inflammation existed, blood was taken from the arm immediately on the patient being replaced in bed; and as the pulse rose under this, twenty ounces were allowed to flow. A large clyster of warm water was ordered forthwith, and two grains of calomel every two hours. Five hours after the operation, the countenance for the first time shewed some anxiety; twelve ounces of blood were taken from the arm, and some extract of colocynth, with calomel and conium, in pills, ordered.

In the morning of the 13th the bowels had not been acted upon ; the belly was soft, and free from pain ; yet, as there was some sharpness of pulse, ten ounces of blood were taken by venesection, and fifteen leeches applied to the abdomen. The colocynth pills were repeated, and again at 2 p.m. At 6, half an ounce of castor oil was given, which at 10 o'clock—that is, 30 hours after the operation—produced the first motion from the bowels. Copious evacuations followed. The case proceeded favourably ; but on the morning of the 17th the lint covering the wound was observed to be tinged yellow, and on removing this, a small quantity of a similar coloured fluid was seen to come from the wound. Firm pressure was made upon the aperture by a compress and roller ; half an ounce of castor oil was taken, and a large enema given. If any severe griping succeeded the exhibition of the castor oil, the compress was directed to be removed ; but this was not called for ; the patient had a free evacuation per anum.

On the 18th bilious fluid in an increased quantity had flowed from the wound, owing in a great measure to the compress having shifted, and the difficulty of applying pressure by means of a roller. To remedy this, and as there was evidently a free passage in the natural course of the intestinal canal, a truss was applied over the compress, and by this means the discharge of bilious matter from the wound was effectually prevented. The truss was continued until the 26th, the bowels acting freely per anum on the exhibition of castor oil ; when, owing to some redness and vesication of the integuments, it was left off, and large poultices applied to the wound. The discharges of bilious matter now recurred, and in considerable quantity ; but in a day or two this subsided, and under the chalk dressing the integuments have assumed a healthy character. The sore is now granulating, healing, and contracting ; there is still some weeping of a bilious fluid, small in quantity, and increased upon the taking an aperient, which is requisite to get the bowels to act per anum. (No. 8.)

Remarks.—(No. 7.)—You will remember that the anatomy of hernia cannot be completely studied by the dissection of the natural parts. The true sac assumes a very different ap-

pearance in the varieties of hernia. We have no time to enter fully upon this subject : yet I must remind you that the peritoneal sac of the femoral hernia of women is so exceedingly thin, and the colour of the intestine shines so distinctly through it, that you are very apt to mistake it for the intestine, and to reduce it with the gut. The circumstance noticed in this case, of the resemblance of the fascia to the bowel, strengthens the same misapprehension. You distinguish the sac by the mode in which the vessels run upon it ; and taking the tumour betwixt the finger and thumb, you can discover that it contains a fluid, and that in that fluid there is a nucleus. The dissection, however, is a very nice one.

(No. 8.)—Of the five cases which are read to you, this is by far the most interesting. I mentioned three sources of danger ; and that where there was a small portion of intestine and a narrow stricture, the coats were apt to be partially cut, and afterwards to ulcerate. You see that, in this case, the general disturbance or injury to the intestinal canal within the abdomen, did not bear a proportion to the injury of the portion included in the hernia ; and you accordingly observe that recovery is almost certain. You will especially mark, that when the intestine within the sac is thus exposed to ulceration and mortification, it does not lie loose ; for, as inflammation accompanies the injury, it is agglutinated by coagulable lymph to the peritoneum behind the stricture. You ought not to undo this adhesion ; and, on the whole, the practice here pursued by my colleague, I conceive to be just what you ought to follow. You will observe that there has not been a sloughing of the intestine, but an ulceration where it was pinched ; and you will do well to mark this distinction when feculent matter is discharged after hernia.

I am inclined to believe, that in this case the whole diameter of the gut was not included in the stricture. If so, this is a very favourable circumstance, and will facilitate the process of cure, and lead us to hope that there will be here no anus at the groin. This is a subject which we shall take up at more leisure.

Femoral Hernia.

CASE IV.—Rebecca Meeking was admitted July 12th, at 7 o'clock in the evening. She stated, that at 6 o'clock this morning she was seized with vomiting and pains in the bowels, when her attention was directed to a tumor in the right groin, which she says she had not observed before. She was visited shortly after by some medical man, who found that she had rupture, and endeavoured to reduce it, but without success; he also tried again this evening, but could not succeed. He then advised her to be brought to the hospital. On her admission there was found to be a femoral hernia of the right side; the tumour was about the size of a walnut. One portion of it was soft and lay over Poupart's ligament, and could be easily brought down; there was another portion much harder, situated to the inside, and below the ligament. This portion was irregular, while the other felt smooth and even. She says that she has vomited frequently during the day. The bowels were open yesterday, but not to-day. The tumor is now very painful on pressure, and offers great resistance, all attempts to reduce it proving ineffectual. There is no pain in the abdomen; the pulse is small and weak. She had an enema, part of which returned immediately, and the remainder came away about half an hour afterwards, mixed with hardened fæces.

The surgeon of the week came to the hospital about 10 o'clock, and tried for a short time to reduce the hernia, but could not make any impression on it; it was accordingly found necessary to operate. An incision was made to the extent of about two inches over the tumour. The irregular mass felt through the skin was now exposed, which proved to be fat, and two or three small glands. About the centre there was seen to be a large vein, running up under the skin of the abdomen; this was carefully avoided. (No. 9.) After a little dissection the sac was exposed, which appeared very thin, being quite transparent; it was opened, and found to contain about 3ss of fluid. The portion of intestine was now exposed, and about the size of a large hazel nut; it was in a very good condition, though of a darker colour than natural, not having

lost its shining appearance. The stricture was divided upwards and inwards, and the intestine easily returned; no omentum was contained in the sac.

The edges of the incision were brought together with adhesive plaster, and a compress and bandage applied. An enema of warm water and gruel was given, and $\frac{3}{4}$ xiv. of blood taken from the arm.

13th.—She has not vomited since the operation; she got some sleep during the night; her bowels have been open once this morning; she had pain in the lower part of the abdomen, which was relieved by the application of leeches; she was ordered to take a calomel and opium pill every six hours, and a mixture containing castor oil. In the evening there was an increase of pain, and she had nine leeches applied, after which she was relieved.

16th.—She has gone on quite favourably since last report; the bowels have been open daily by taking small doses of castor oil.

After this her improvement was rapid, and she had not a bad symptom. The wound required to be poulticed for about a week, after which it was dressed, and gradually healed. She was discharged from the hospital August 14th. (No. 10).

Remarks.—(No. 9.)—The greatest advantage of experience in a lecturer, is when he recollects what were the things which puzzled him in his early practice. In just such a case as this was my first operation performed. I well remember the difficulty I had in distinguishing the sac, and opening it. The femoral hernia, as I have had frequent occasion to observe to you, is generally very small: and over it lie the glands of the groin, with much fat, and sometimes, indeed not unfrequently, there are sacs, containing fluids, or sort of hydatid tumours, making the mass altogether irregular. I have just observed that the layers covering the peritoneum are very smooth, and very like the proper sac; so that this forms a piece of dissection which requires some dexterity, together with a perfect knowledge of the distinct characters belonging to the parts. You lay the glands aside, in such a manner as to make it unnecessary to divide the lymphatics of

the thigh. The wounding of the vein, here spoken of, is of no consequence, further than that by covering the surfaces with blood, it may make the necessary dissection a little more difficult.

(No. 10.)—The only further observation that I will make on this case, is in regard to the direction of the bistoury in cutting the stricture. It may have appeared to the by-standers that the cut was made obliquely upwards and inwards; but it was cut directly upwards. In these small herniæ, it is of very little moment; for all you have to divide is just the sharp edge of that tendinous arch which stretches across the upper part of the neck of the sac: and you would do well to observe with what intention this is done; which will afford you a measure of the extent of your incision. In such cases, you do not think of forcing in the point of your finger, but only the directory. Then passing the straight bistoury (which you see is blunt to half an inch from the point, and cuts only at one small part of its edge,) you raise the hand, separating the instruments; and you do not draw the bistoury, as in common cutting, but raise it like a lever, the point resting on the groove of the directory. By this means, you cut only what strongly resists; that is, the firm edge of the ligament, and, of course, a small portion of the neck of the sac. Now, when this is done, you are not at once to push up the intestine; but rather draw it a little down, and compress it, and empty it; and always be very careful in the mode of reducing it, avoiding, as the most dangerous practice, the thrusting in of the finger into the stricture, whilst the tender part of the gut remains in its original place.

Direct Inguinal Hernia.

CASE V.—On the 14th of July, at the hour of visit, the attention of the surgeon was called to the case of a man between fifty and sixty years of age, who for the last two days had had bilious, and now stercoraceous vomiting, and from whose bowels there had been no evacuation per anum for a week. He had for years had a rupture in each groin. The hernial tumour of the right side was found to be large, soft, and in its contents were felt formed fæces. With some difficulty it

could be entirely reduced, descending again immediately on the pressure being withdrawn ; that of the left side was about the size of a hen's egg, tense, but yielding in some measure to pressure, which was attended with a gurgling noise ; but the swelling could not be reduced. The skin over the latter was reddened, the abdomen was distended, and the skin cold and clammy. It was feared mortification of the contents of the left hernial sac had taken place ; and on cutting into the sac, this was found to be the case with a portion of bowel which it contained. The stricture, which was not tight, was divided directly upwards, the bowel was opened, and the edges of the incision in it attached by ligature to those of the skin. A free and copious discharge of the contents of the intestinal canal immediately took place, the tension of the abdomen subsided, but the patient survived only thirty hours.

On examination of the body, extensive inflammation of the peritoneum, with effusion of lymph, was found to have existed. The hernia operated upon was discovered to have been a direct one, passing immediately from the belly through the external ring. The epigastric artery passed upwards, on the outside of the neck of the sac ; and again, on the outside of this vessel, was seen the internal ring dilated, and with a pouch of peritoneum propelled a little way through the inguinal canal ; so that, if the man had lived, it seemed as if he might have had a hernia passing in the usual way through this canal, in addition to the direct one operated upon, the epigastric artery passing up between the openings of the two sacs.

The hernial tumour of the right side was formed principally of the caput cœcum ; it was not included in a sac ; and although a sac did exist, this lay on the anterior part of the bowel only, and contained nothing. The posterior and inferior parts of the gut were covered by loose cellular substance. The intestine contained in the direct hernia of the left side, had been the lower part of the ilium, close to the cœcum.

This case shewed the advantage of the rule of operating in inguinal hernia, by dividing the stricture directly upwards, which had been done in this case, and yet the incision had not touched the epigastric artery.—No.11.

(No. 11.)—We have been observing that the incision of the stricture should be made directly upwards. In this hernia (the bubonocoele) there is an additional reason for this practice, since it is not always clear whether the case be one of direct or oblique hernia : and you have here had it demonstrated that in the one the artery lies on the outside, and in the other on the inside ; while in both, it is close upon the neck of the sac ; so that if, in the direct hernia, the surgeon had cut obliquely upwards and outwards, the artery would have been in danger : and the same danger would have been incurred if, in the other, he had cut obliquely upwards and inwards. Thus you have the reason of the rule to cut directly upwards in every case.

Case of Scrotal Hernia—The Stricture in the Mouth of the Sac.

Wm. Cooper, æt. 47, was brought to the hospital at five o'clock in the morning of the 10th February, by a surgeon who had previously attended him. He had a scrotal hernia on the right side, which, on his being placed in bed, was reduced with the greatest ease.

It was then stated, that the patient had been subject to hernia for twenty years ; that it had come down five years ago, and there had been some difficulty in reducing it. After that time he wore a truss, but continued the use of it for a short time only. On Thursday last (the 7th), in the evening, his rupture again came down ; he felt sick, and took a black draught, which he vomited. Next day he sent for a chemist, who made several attempts to reduce the hernia : upon his not succeeding, he confessed that he had not much experience in these cases, and left the patient. About two o'clock in the afternoon, he was seen by the surgeon who accompanied him to the hospital. This gentleman succeeded in reducing the hernia ; so that the tumour disappeared, and he could even push the point of his finger into the external abdominal ring. The patient expressed himself greatly relieved after this operation. He obtained no evacuation from his bowels, however, from the time that the hernia came down until he was conveyed to the hospital. This surgeon gave him, in separate

doses, to the amount of fifty grains of compound extract of colocynth, and sixteen grains of calomel, and several injections by the rectum. He also bled him, soon after the operation, to twenty ounces.

When brought to the hospital, his condition shewed that he was in a state of great danger. He had constant vomiting; his abdomen was swelled and tympanitic, and exquisitely tender to the touch, particularly at the lower part, on the right side; he had a small, quick, almost a fluttering pulse; his features were sunk and pallid. The house-surgeon ordered him a dose of castor-oil, with laudanum, and a clyster. When visited at ten o'clock he had had three motions, and expressed himself as being a great deal better, and quite easy. His pulse was fuller. During the greater part of the day, he continued to feel easier than he had hitherto been. But about six o'clock in the evening, it was found that his extremities were cold and damp; he was restless, complaining of pain in his abdomen. He died that night. It is to be remarked, that the hernia came down repeatedly during the day, and was each time reduced with great facility.

Dissection.—The hernia was in the scrotum: it had come down shortly before death. Upon cutting through the abdominal muscles, the intestines rolled out from the incision, being distended with flatus. All the small intestines were highly inflamed, distended to the utmost, and, in some parts, loaded with dark fluid contents. The portion of gut which was included in the hernial sac was a knuckle of the *intestinum ileum*, very near its termination in the *cæcum*. Above the stricture, the intestine was of a deep-red colour, marked with several patches of an inky blackness, and it was loaded with dark offensive fluid. On turning these coils aside, the lower portion of the *ileum*, leading from the hernia towards the *cæcum*, was seen small and contracted; its folds being in a mass together. These were of a pale green colour, and their surfaces were marked here and there with dark mortified spots. In the colon there was nothing to remark, except that it was contracted, and that it had not partaken of the inflammation. There was a large duplicature of the transverse arch, with a thickened mass of omentum attached to it, which appeared,

from its form and the old adhesions that united it, to be the portion which had been reduced five years ago, when the rupture had come down.

On examining the contents of the hernial sac, there was a fold of distended mortified gut included within it. The coats were here of a dark brown, and in some places of a perfectly black colour: they were thicker and more pulpy than natural. Where the stricture was, the gut appeared soft, as if it were about to ulcerate. Around the [neck of the sac, which formed the stricture, there hung a fold of the peritoneum upon the inside, which was loose, resembling an empty bag. Upon squeezing the strangulated portion of intestine, evacuating some of the air which distended it, and then reducing it, it was found that the intestine could very easily and effectually be pushed through the external abdominal ring, so as to be hid from the sight. On looking to the inside, however, it was seen that the portion of gut had carried the neck of the sac before it into the abdominal cavity; and the duplicature of the peritoneum, which has been described, being unfolded, had formed a new sac for including the knuckle of intestine, on the inside of the abdominal muscles. Thus the fold of intestine was pushed through the external abdominal ring, through the spermatic canal, and through that part which is described to be an internal ring (but of which ring no trace could be seen), and was reduced with the abdominal muscles: but not within the abdominal cavity. The neck of the sac had been torn off from the internal ring, in the effort of reduction, but continued to grasp the included portion of gut.

*Case of Congenital Hernia ; a Second Portion coming down
producing Strangulation.*

William Heath, æt. 40, a tall, muscular man, was brought to the hospital on Saturday, June 14th, at 9 o'clock p. m. having a large scrotal hernia on the left side. He has been subject to hernia for six years, and has worn a truss for the last four years. He says it was originally produced by the kick of a horse. It has come down only once since that time, and that was two years ago: it was then easily reduced. To-

day, about half-past four, while riding, his horse made a sudden spring, which threw him off the saddle : at that moment he felt something give way in his groin, and he discovered that his rupture had come down : his truss was on at the time. A surgeon attempted for about half an hour to reduce the hernia, but failing, he sent him to the hospital.

The appearance of the tumour was peculiar. It distended one side of the scrotum, but it occupied considerably more of the groin than is common : the upper part had a remarkable squareness, owing to a projection of the tumour, which extended obliquely across, towards the ilium, passing the abdominal ring. This part he felt hard and inelastic, and the integuments were abraded and slightly inflamed over it. The lower part of the tumour was more compressible, as if it contained flatus, or serum. He had nausea and frequent vomiting, which did not appear, however, to be stercoraceous : he suffered violent pain in the lower part of his abdomen, and writhed about in bed : his pulse was small and sharp, about 60 ; and the countenance anxious. The taxis, from which the patient suffered great pain, having been persevered in without effect, Mr Bell was sent for, who, after attempting reduction for a very few minutes, called a consultation. In the mean time, the patient was put into the warm-bath, where the taxis was again gently tried, but with similar want of success. It was remarked, when he was brought back to bed, after having been in the bath, that the tumour, instead of being diminished by the operation of the taxis, was very considerably increased in size.

Operation.—12 o'clock. An incision, in a semi-circular direction, three inches in length, was made opposite to the neck of the tumour. Three successive layers of fascia being raised, the sac appeared, perfectly transparent, and its contents dark coloured. A projection, like a cul-de-sac, extended under the integuments of the groin. A dissection was then made to clear the neck of the sac ; and the upper pillar of the external abdominal ring was exposed. The sac was opened, and about five ounces of bloody serum spouted out. The directory being passed in at the opening, and the sac slit up, a portion of intestine, of a bright vermilion colour, presented itself, and there was seen, occupying the larger portion of the scrotum,

a part of the intestine, distinguishable from that first exposed by its colour: it was of a dark lake, or bluish tint; in short, it had the colour of venous blood. When the folds of intestine were reduced, the testis was seen projecting on the back part of the inner surface of the sac, shewing that the hernia was congenital.

Almost immediately after the operation, he fell asleep. Pulse 56, small. Hydrarg. submur. gr. iii.; pulv. opii, gr. i. The calomel to be continued every three hours. At four o'clock he was bled to $\frac{3}{4}$ viii. as the pulse had risen.

Sunday, 15th.—Noon. The bowels have not been opened. He has had three clysters in the course of the morning. Pulse 84. Tongue clean. Skin hot. No thirst.—Evening. After taking an ounce of castor-oil, his bowels were freely opened; and he expressed himself much relieved. He was bled to $\frac{3}{4}$ xiv.

Monday, 16th.—He has had copious evacuations of the bowels. Early this morning he was bled to $\frac{3}{4}$ xvi. The abdomen is distended: there is tenderness on pressure upon the left side of the umbilicus; and he is unwilling to move, but he expresses himself comfortable; and he sleeps a great deal. Twenty leeches to be applied to the abdomen.—Evening. His bowels have again been opened: the evacuations are of a fluid consistence. About 6 o'clock he had a slight vomiting, which returned a few minutes ago: it appeared to be the toast and water which he had swallowed that was returned. About three hours ago his pulse began to intermit: now it intermits irregularly, and at the same time is quick and thrilling. His abdomen is distended and hard. When it is pressed, he winces; yet, he says, he feels quite easy. The respiration short and quick: the skin soft and perspiring. The leeches and fomentations to the belly to be repeated: he is to take the calomel and opium pill.

17th.—Pulse 128. Although all the symptoms are aggravated, he expresses himself as more comfortable. The fomentations continued. A large blister to be applied near the umbilicus.—Evening. He has vomited frequently a dark-coloured fluid, which is very offensive. His voice is in a whisper; the abdomen more tympanitic; a cold perspiration on his face.

He complains of no pain. At 5 o'clock on the morning of the 18th he expired.

Dissection: 30 hours after death. The abdominal cavity being exposed, four folds of intestine were found agglutinated together, and these converged towards the neck of the sac. On pulling them aside, the mass of intestines that had been in the herniary sac was seen: it was black, and had the appearance of being sphacelated; but when examined with the fingers, the coats of the intestines seemed of a natural consistence. In the neighbourhood of the sac the intestines adhered to the abdominal parietes, the peritoneal lining of which had a dull opaque colour, with ridges of coagulated lymph upon it, marking the convolutions of the intestines. The intestines above the part which had been down in the herniary sac, were distended principally with flatus: the large intestines were empty and contracted. There was partial adhesion to the external wound. The sac contained a considerable quantity of thin purulent matter, and its surface was highly inflamed: the orifice was closed by a deposit of coagulable lymph, which was easily torn through. There was effusion of serum beneath the arachnoid membrane of the brain.

Case of Strangulated Hernia—The Tendon cut—the neck of the Sac left entire.

— G —, æt. 84, was admitted into the hospital on Friday, 12th instant, having a large scrotal hernia, which could not be reduced. He has been subject to hernia for the last twenty years, and has worn a truss. This morning at three o'clock, the tumour suddenly came down; it increased in size so as to be larger than it had ever been before, and he was unable to reduce it. He went to a surgeon, who attempted the reduction, but without success, and in the afternoon he was brought to the hospital. The tumour was large, irregular, and very tense, particularly at the upper part, where there was a distinct round swelling, like an additional lobe to the great tumour. The pillar of the ring was very distinctly marked by a deep transverse furrow. The taxis was tried, first by the house-surgeon, and afterwards by the surgeon of the week, for twenty minutes. The patient was then put into the warm

bath, a stimulating clyster was administered, and again the reduction was attempted ; but nothing seemed to relieve the distention of the tumour. After consultation, the operation was determined on.

An incision was made through the integuments, opposite to the neck of the sac, and the tendon of the abdominal muscle was laid bare. A small puncture was then made into the neck of the sac, just large enough to admit the directory ; this instrument was passed up into the abdomen, but the sac was not slit up. The bistoury was introduced between the tendon of the abdominal muscle and the peritoneum, and the upper edge of the pillar of the ring was divided—it tore audibly on the slightest touch of the instrument. So great was the tension, that the moment this was done a noise was heard in the tumour, obviously produced by the flatus from the portion of intestine in the sac passing into that which was in the abdomen. A little more dissection of the ring was made, and then slight pressure on the scrotum caused the whole of the contents to slip up into the abdomen. After the intestine was reduced, a very large quantity of limpid fluid spouted from the puncture in the sac. The wound was dressed in the usual way. Forty drops of laudanum were given in warm wine and water, and a purgative clyster was administered.

Gentlemen, this is a case too important to be passed over : it has extensive bearings upon the important and ever-returning questions:—What is the time, and what is the mode of performing the operation for hernia ?

When I last drew your attention to the subject, it was to mark the peculiarities that attend the large scrotal hernia. I shall continue this subject to-night, and it is particularly necessary for you to bear in mind that my remarks are limited to that form of the complaint,—the large scrotal hernia, for the most part occurring in old men. You have seen that the common mode of operation is attended with certain and obvious inconveniences—that when the knife is drawn extensively along the whole face of the tumor, and the sac is opened to the same extent, the intestines evolve themselves in a very surprising manner, as if the whole bowels were turning out of the abdomen. This is the consequence of the pressure being

taken off by the opening of the sac : and now begins a labour which is for some time ineffectual, of restraining and emptying these intestines : the surgeon following the old rule of reducing that portion which last came down, attempts to push up the intestines near the ring : he introduces, therefore, his finger through the ring, necessarily squeezing or compressing the gut, and each inch of the intestine, successively, is submitted to a sort of kneading process. This is necessarily tedious ; the intestines are long exposed, they are thoroughly handled, and each particular portion pinched, the natural consequence of which is a fatal result. Dissection confirms us in our notion of the cause of failure here, for when the abdomen is exposed we see a mass of inflamed intestines, for the most part glued together by coagulated lymph, at all events distinguishable from the rest by the hues of inflammation or of mortification, and these can be recognised as the parts which we had seen handled in the operation during the patient's life.

We find in this patient the common circumstances attending the strangulation of a large hernia, coming down from time to time, and reducible. But it happens on some occasions that an additional portion or knuckle of the intestine is forced down by the side of that which commonly occupies the sac, and this portion runs rapidly into strangulation, or, at least, becomes filled, so that the reduction is rendered difficult. I believe that this took place in the present instance, from that part of the narrative which describes a small tumour near the neck, and distinguishable from the general convexity.

With respect to the mode of operating in hernia, you will observe that this ought to vary according to the difference in the size of the tumour. If you are describing the operation of a surgeon on a small hernia, you would say that he drew his knife over the whole tumour, from the top to the bottom. But wherefore is it that he does this ? It is because, unless he make an incision of a certain length, he cannot prosecute the last part of the operation—he cannot divide the stricture. When the tumour, on the other hand, extends seven or eight inches, to make the incision all the length of it, betrays that the surgeon has no distinct notion of the object of this part of the operation. It may enable the bystanders to say that

they have seen the operation very well—that the intestine and the omentum were displayed very distinctly; but how stands this in reference to the patient? Ought there to be this display? There ought not; you should see very little,—that is to say, an incision from three to four inches in length, opposite to the neck of the hernia; a neat dissection of the upper pillar of the ring; and an investigation made whether the stricture results from the embracing of the tendon. When the surgeon has arrived at this stage, the operation may be prosecuted in two ways: the sac may be punctured near its neck, the directory introduced from this into the abdomen, and the stricture cut from within; or, the firmer fasciæ, which are around the neck of the sac, and the upper margin of the ring, may be lifted by the directory in succession, and divided until only the proper peritoneum, thin and almost transparent, is between you and the intestine: the stricture being thus removed, and nothing but the elastic peritoneum remaining, the scrotum may be grasped, the contents of the gut squeezed out, and the hernia reduced. In either mode of operating, the advantages are these: that you do not permit the exposure and evolving of the gut—you have not the distended intestines among your hands—they are not submitted to that *handling* which I conceive to be so dangerous; and if it should so happen that the mouth of the sac is large and the intestines apt to slip down again, they do not lie exposed in the wound, but only slip again into the sac.

If I were treating this question in a general lecture, the inquiry would assume a speculative character: it might be said, that the stricture is so incorporated with the proper sac that it can never be dissected off its mouth. But see what has occurred in the present instance,—no sooner was the margin of the pillar divided by the bistoury, than the pent-up flatus was released, and the croaking of the intestine gave token of relief. Again it may be said, that you may reduce the intestine in an improper state for reduction. Now the matter stands practically thus: You are endeavouring all you can by the taxis to reduce the intestine; you find, from the form of the neck and the abrupt notching of it by a cross band, that you cannot succeed. You say, if it were not for that, I should

succeed in the operation of the taxis: you try it again and fail. In ten minutes from that failure you may have the stricture undone, and the cause of strangulation removed; and why not then reduce the intestine?—because it may be in a state unfit for reduction! Does not, then, the objection apply to the last steps of the taxis? Indeed, I believe that, practically speaking, this is no objection at all; or, if it be, the advantages are greater, inasmuch as the operation is rendered more simple, is attended with less danger, and therefore may be had recourse to earlier. This is not a new mode of operating: read the chapter on this subject in Petit's works: it was recommended also by Dr Monroe; and the latter claimed the original idea: his object in it, however, was very explicitly declared to be the exclusion of air from the *shut sac*, to which he attributed all the mischief in unsuccessful cases of hernia. As a general rule of operating, I should say it was exceptionable, and I, therefore, once more remind you that I am speaking of the large scrotal, or indeed of any large hernia. Let the rule be this, that you make your dissection—for I call it a dissection—on the neck of the sac, and not on the most prominent part of the tumor: that you divide the transverse fibres of the fascia, and the edge of the upper pillars of the ring; that failing in this manner to relieve the gut, you puncture the sac near the stricture, introduce your directory, and divide the sharp edge of the stricture from within. To this there can be no objection, because you see the surface of the intestine, although you do not largely expose it, and you have the jet of serous fluid from the sac; which two circumstances will give you sufficient token of the condition of the gut.

Hernia into the Labium.

Gentlemen, I am tempted to continue the subject of last night's clinical lecture, because a woman has been since brought to the hospital suffering from hernia, and in circumstances which further illustrate our subject. This patient was sixty years of age. She had a labial hernia; that is, you know, a hernia descending through the abdominal ring, and gradually falling into the labium, as the inguinal hernia drops into the

scrotum. She has been subject to rupture for twenty years. No truss had been used. When brought into the hospital, strangulation had continued for thirty hours. The tumour was incompressible. The general symptoms were shivering, vomiting, and tenderness of the abdomen, notwithstanding several stools had been procured by injections. The usual processes were had recourse to; reduction was attempted by the taxis; she was bled, put into the warm bath, had clysters, and again the taxis was employed, but ineffectually.

Observe, now, what occurred during the operation in this case, and mark the contrast with the former. The neck of the sac being disclosed, the ring of the abdominal muscle was found to be loose or free. The sac was opened; and immediately a vast quantity of serum was ejected from it. The intestine, far from being distended, lay flat within the sac. It was dark-coloured, and had a coating of lymph upon it. The finger was used as the directory: it could be passed through the external ring, and the stricture was found to be in the internal ring. It was divided, the finger being within the sac, and the directory used to guide the bistoury. This morning the report was most favourable: she had copious stools, all tenderness of the belly was gone, and the tongue was clean.

First, I ought to remind you, that when we say the intestine had been strangulated for thirty hours, there must be some incorrectness in our language. I shall not attempt to explain the whole of this subject, but confine myself to one part of it.

The circumstance of this case which deserves your most earnest attention is this: You will observe that in the former case, of scrotal hernia, when the sac was punctured no fluid spouted out; but when the intestine was reduced, an abundant flow took place from the abdomen. In the present instance, the tumour was particularly tense; a great quantity of fluid escaped the moment the sac was opened: and the intestine presented a flattened appearance. These are circumstances very important in the pathology of hernia. I shall very soon shew, in the regular lecture, when treating on this subject methodically, that it is the distention and gorging of the intestine, and the sudden angle which it consequently

makes round the stricture, that impede the circulation, and bring on strangulation. Here, in the present instance, I believe the intestine was protected by the great pressure of the fluid which lay over it, and thus retarded the catastrophe of actual strangulation, while it made it of more easy reduction. But it is with a view to the circumstances of the former case, and the question of dividing the stricture, that I detain you to examine this. I was particular in stating, last evening, that my remarks were confined to the large scrotal hernia. In the present case, you saw that it was necessary to make the incision large in proportion to the size of the tumour; and that the stricture was not at all in the pillar of the outward ring, but in the inner abdominal ring. Hence it was that the sac was opened, and the division of the stricture made from within; the stricture being, in all probability, partly in the neck of the sac itself, and partly in the margin of the transversalis fascia.

Some further Remarks on Hernia.

I proposed to-day to make some remarks on these two cases of hernia, which you have just visited with me, both occurring in women, and in whom the operations have been successful.

Our progress in professional knowledge is not represented by a straight line: we do not move uniformly forward, but rather like a man on skates, whose efforts receive a bias, and who, after certain complimentary manœuvres to the admiring crowd, returns very nearly to the point of the circle from which he set out. You will be more sensible of this as you advance in life. In recommending you to study the anatomy of hernia, I may suggest this to you—that if you proceed in your dissection with a fine-edged scalpel, hook, and forceps, you may display all the fasciæ that have been minutely described in books, and yet remain ignorant of the exact ligament or tendon which strangulates the gut, or, indeed, of the nature of those passages through which rupture takes place. Let me, then, advise you to *feel* your way here. Suppose you were in the situation which I held early in life, that of assistant to a lecturer, and that he required you to make such a

hernia on the dead subject as he could operate upon,—you must make your incision into the abdomen ; you get your hand into it, and pass it round the inside of Poupart's ligament, and round the pillars of the rings, in search of the internal ring ; but you find no outlet. The first thing you are called on to admire is how completely—how perfectly, this lower part of the abdominal walls is closed up—how effectually it is contrived that the viscera shall not slip out by the arch, under Poupart's ligament, which admits the vessels to the thigh, nor through the spermatic passage.

But being forced to make an inguinal hernia, you begin to work at that point where the vessels of the testicle or cord (scarcely yet a cord) pass through. The vessels of the testicle pass between the two portions of the transversalis fascia ; and, at last, you bore in your finger, and make the passage wider and wider. What do you feel ? You feel that towards the inside—that is to say, towards the pubes—you have a difficulty in enlarging the passage ; you feel the sharp edge of a tendon or ligament, and that you must break it down by force, so as to bring the internal ring nearly opposite to the external one ; at last, your finger slips out between the pillars of the external abdominal ring. Now this is an admirable demonstration, although there be nothing seen ! You have, what is better, a distinct *feeling*—a conviction of what it is that makes the stricture, whether at the inner or the outer ring. Now you understand what I mean by recommending you to trust to the finger, or to the touch rather than to the eye.

Formerly, in my course of lectures, when I came to this subject, I was happy to speak of Sir Astley Cooper's work as one creditable to himself, to the profession, and to the country. I conceive that in that publication the anatomy is perfect to its end ; for I hold that the anatomy may be carried too far. You will say that is a strange opinion : how can it do any harm ? By occupying your minds too much, to the exclusion of things more important ; and I hold that the pathology of the intestine, from which the very rules of practice are drawn, is more important than the anatomy of the rings. Besides, it is quite possible, as I have seen, for students to

dissect and work on the fasciæ of the groin and inside of the abdomen for the greater part of the season, to the neglect of many subjects equally important in practice. This is what I mean by saying that the anatomy may be carried too far;—it may occupy too much of your time and attention.

Now I wish that the abilities of my friend Mr Guthrie had been directed to a different subject. By taking up this, he appears to me to be retouching a portrait that was already finished. A picture which had been carefully composed, varnished, framed, hung up, and admired, he takes down again, and retouches, and, I had almost said, daubs it with foreign colours. I am unwilling to acknowledge these foreign authorities, for, after all, their utmost merit is to have done in their own country what Sir Astley Cooper has given an example of in this. I am not about to deliver any thing new: but I have always thought, and do now think, that in consequence of the discussions concerning the parts around the sac, there has been rather a neglect of the great principles of pathology which are to be drawn from the contemplation of the gut. I have heretofore criticised freely some of the opinions in Sir Astley Cooper's great work, upon the same grounds that I would now criticise his commentator.

It is conceived that the stricture, in inguinal hernia, may result from the contraction of the muscular fibres of the passage. Now I would ask you, for already you are acquainted with the data on which we reason, do you observe any difference in the symptoms of a hernia when it comes through the spermatic passage, and when it comes under Poupart's ligament; when it comes through some of the accidental rents in the abdominal walls, and is called an abdominal or ventral hernia; and when it comes through the umbilical passage, and is called *exomphalos*; or when it is an internal hernia, and passes through the diaphragm or the obturator ligament? Is there any record of symptoms to distinguish the case according to the part through which the intestine passes? Is it not, on the contrary, universally assented to and understood, that the symptoms of hernia are the same, in whatever part the disease occurs? Now you observe how this bears upon the question, because, if the symptoms of a hernia be univer-

sally the same where there are muscular fibres and where there are none, it is pretty clear that these symptoms must be attributable to something else than the muscular fibres of the ring. Why is it that the pain is always referred to the umbilicus? Because the girding of a portion of the intestine is attended with an action in the intestine itself, and the pain is first fixed in that part, and then passes round, as in colic, attended with a twisting in the region of the umbilicus; which pain again returns to the part which is strictured, wherever the stricture may be. The irregularity, or rather the return of the pain, is the character which belongs to spasmodic action; but this spasm is not from the girding of the stricture around the intestine, but from the action of the intestine itself: it is a muscular tube, and in it, as in all muscular parts, the pain occurs in paroxysms.

Case of Urethra ruptured from violence.

Sept. 3.—Hamlet Kemp, aged 41. This man in stepping over a gate into a field, slipped and fell, so as severely to hurt the perineum. It appears he was drunk, and continued that evening to dance. From this time he lost all power of passing urine; and when brought into the hospital, the bladder could be felt above the pubes: there was a tumour in the perineum. Into this tumour an incision was made, and a cavity was disclosed containing blood and urine. This incision relieved the urethra and the neck of the bladder, and he was enabled to make water through the wound. On the 19th, an elastic gum catheter was introduced into the bladder, through the perineum. At this time it was found impossible to pass a bougie or catheter from the extremity of the penis down to the wound in the perineum.

Operation.—It was necessary to make good the passage through the canal of the urethra, and to introduce a catheter across the wound in the perineum from the penis into the bladder. Some time was necessarily lost in attempting to dilate the urethra, or to break down the adhesions, but this was not

found practicable without the knife. A catheter was introduced into the urethra, and the point steadily pressed against the obstruction. An incision was then made upon the extremity of the instrument, and the point of the instrument was thus brought out at the wound in the perineum. Some difficulty was now experienced in passing an instrument into the bladder from the wound. When this was accomplished, much care was necessary to open the communication through the urethra, between the point of the catheter and the instrument passed into the bladder from the wound. This last instrument was then withdrawn, and the catheter passed into the bladder.

Sept. 27th.—The man is doing well. He passes his urine freely through the catheter. A little comes by the side of the instrument through the wound. He does not suffer much irritation.

Oct. 8th.—He makes no water by the wound, which is now filled up and nearly completely united.

22d.—The catheter is finally withdrawn. Nitric acid, at first diluted and then pure, was applied to the wound to hasten the granulation.

Nov. 12th.—In consequence of erection, there occurred a difficulty of passing his water. When a catheter was introduced, it met with an obstruction. By the use of the bougie this was soon overcome, and the patient was dismissed cured.

Case of Abscess in the Perineum.

Nov. 27th.—Humphrey Robinson, æt. 50. His complaint is a difficulty of passing his urine, and that a swelling has appeared behind his scrotum. This swelling is about the size of half a lemon. It embraces that part of the spongy body of the urethra which is behind the scrotum; and is hard and slightly inflamed upon the surface. He does not dwell upon the pain or difficulty of making urine; nor is he apprehensive for himself. He is however sent into the ward, and is ordered a laxative, and a fomentation to the part.

Here follows a long account of suffering common to these cases.

This is the present state of the swelling, it is prominent,

red and inflamed, and it had pointed ; a little matter oozing from the ulceration. It was freely opened with a lancet. A bougie was introduced to ascertain the state of the urethra. A soft wax bougie was introduced after it was oiled, and the point of it dipped in warm water. The impression upon it, when withdrawn, shewed that there was a very narrow stricture, just anterior to the part where the tumour of the perineum had taken place.

Dec. 3d.—This man says he is perfectly relieved. That he makes urine in a stream ; it is however very small, and all the difficulties of the case remain. The parts in the perineum are soft and discharge kindly. No urine comes by this passage.

10th.—We missed this man from his bed this morning. He is up and moving about. From the pressure of business in the hospital there has not been so much progress in dilating the stricture as might have been expected. A bougie is to be introduced from time to time until the stricture shall admit an elastic gum catheter to be passed into the bladder. The catheter is then to be retained, and the patient to be confined to his bed.

15th.—The catheter has been introduced as recommended in the last report, and a third size is now used, a proof that the stricture has given way rapidly. The patient complains of pain and swelling in the perineum, and that the abscess which had closed is inclined to open again. This is the circumstance of most consequence to be noticed in using the catheter for the destruction of strictures. The presence of the catheter irritates the membrane of the urethra ; and therefore the patient must be kept very still in bed ; and every means used to keep down inflammation, and among others leeching and fomenting of the perineum. In the present instance, let it be observed whether or not the urine passes between the urethra and catheter, so as to get into the fistula ; that it does, so is the opinion of the patient himself. To obviate this, let care be taken that the catheter is free and not stopped with mucus, and as the instrument gets loose in the stricture, let a larger catheter be substituted. If the inflammation goes any length, the catheter must be withdrawn, and only introduced occasionally to draw off his urine.

17th.—The catheter has been withdrawn. A small circumscribed abscess has formed behind the scrotum. This has been opened with the lancet, and ordered to be fomented. A large catheter was introduced into the urethra. The man is agreeably surprised to find that already so large an instrument can be introduced through his stricture. The care of the dresser will now be directed to preserve the advantages which he has gained, and at the same time to permit the inflammation to subside.

Case of diseased Urethra.

—— Jones, æt. 33. This is a parallel case with the last. Tuesday 28th October.—To-day this man was found in the waiting-room, and recognised as a patient dismissed about three months ago, having recovered from what appeared a white-swelling of the knee-joint. He was like a dying creature, his countenance cadaverous, and his strength so exhausted, that it was necessary to carry him into the ward. It was now ascertained that he suffered from obstruction of urine, and upon proposing to introduce an instrument into his bladder, he vehemently declared that it was not possible; and when the necessity of it was pressed upon him, he entreated to have the very smallest possible bougie, as he had himself in vain attempted to introduce a *wire*.

On examination, it was found that a great part of the urethra had been destroyed by ulceration; that the ulcer had eat down between the prepuce and the body of the penis. Here was a hard cicatrix, at the bottom of which the urethra opened by an orifice so small, and surrounded with such hard substance, that the point of the smallest bougie passed with difficulty.

A very small bougie was, however, passed into his bladder, and after this the smallest elastic gum-catheter was introduced; very little water was found in the bladder.

Leeches and fomentations were ordered above the pubes, and an opiate clyster to be administered. Cordials have been given. This man continued to sink and died this morning.

Dissection. The bladder was found contracted to the form

and size of an egg: the substance of it much thickened and firm. The internal coat universally inflamed: each little portion of its rugous surface, was surmounted with a black spot, like black extravasated blood: a blush of redness extend generally over the surface. In these appearances we have sufficient proof that the increasing excitement and contraction of the bladder had produced the irritation and fever under which he sunk. A great part of the urethra, commencing from the point of the penis, was destroyed by ulceration, and beyond this for two inches the canal was remarkably contracted owing to the condensation of the surrounding spongy body; hard lines like cords were seen running longitudinally, not circularly on the membrane of the urethra. There was a second stricture and the commencement of a false passage nearer the bladder.

Case of Urinary Fistula, shewing the effects of an old neglected Stricture upon the Urethra, Bladder and Kidney.

John Benson, æt. 42, February 4th 1824. This man says he had a stricture two years ago. This was supposed to be of so trifling a nature, that the surgeon undertook to cure him in a few days. In introducing instruments he did some injury to the passage, which was followed by a great swelling of the scrotum, and this the patient represents by putting his two fists together. He says it became black and sloughed away, and the testicles were exposed. He was cured by the use of the catheter, and he described himself as perfectly well during two years [until he was admitted into this hospital for a sore leg on February 4th.

About a month after that date, he perceived a swelling growing on the point of the right hip, a little behind the anus, which gave him great pain, especially at the water-closet. This was leeches and then poulticed, and it burst in about nine or ten days after he had first perceived it. He says he had no difficulty during the progress of this abscess in passing his urine. After the abscess burst, and when he made water, the urine flowed through the new sinus with force, being squirted to a considerable distance: little urine in comparison passed through the natural passage.

The smallest sized catheter could only be introduced into

the bladder, it being found that there was a stricture about four and a half inches down the urethra, a little lower, he says, than the place where the stricture, which he had two years ago, was situated. Since the introduction of the catheter, no urine has escaped by the sinus in the hip. Successively larger catheters have been introduced, and he has now one of nearly the full size. He can at present make water through the urethra, and none comes by the fistulous sinus.

REMARKS. It would not appear from this man's own account that he had a narrow stricture, or that he suffered excessively from disorder of the urinary organs; and yet we frequently see patients suffering severely without such consequences as resulted in the present case. The truth is, that in some constitutions there is a greater proneness to abscess, and of course to urinary abscess: of which we may presume this is an example. In some of these instances we shall find ourselves baffled; for when the catheter is introduced to prevent the urine running into the abscess, and the abscess becoming a fistula by the presence of urine in it, the catheter itself becomes such a source of irritation that new abscesses are formed around the urethra, and cases have occurred in this house, and preparations are in the Museum,* where the membrane of the urethra has been absorbed for a considerable part of its length, rendering a cure totally impossible. We hope for a different conclusion in this case.

In the present instance it may be a question whether the communication has been formed directly with the urethra or with an abscess making way through the prostate. On this depends his ultimate recovery; at present the man's health promises fairly.

May 22. A new abscess has formed an inch anterior to the old fistula, and nearer the anus. On the 19th it burst and continued to discharge a great quantity of pus. The skin near it is now inflamed, and there is another abscess pointing. He has ceased wearing the catheter, and makes his water freely. This report leads us to suspect that the rectum is concerned in the fistula, though the probe has not yet been passed so

* Now in the College of Surgeons here.

deep. After being long an inmate of the hospital, this patient was dismissed cured of his sore leg, and making water by the natural passage.

In November 27. 1827, This man has come back seeking to be readmitted for a fistula of the perineum anterior to the scrotum. He stated that after leaving the hospital his difficulty of making water returned. His scrotum was suddenly distended, and portions turned black and separated: finally, the parts healed, but the sinus through which he now makes water remained. In June last an operation was performed on him for the cure of this fistula, and a large-sized catheter was introduced into the bladder; but the fistula did not heal. At present the sides of the sinus are hard and callous, and the probe passes directly into the urethra. There is an abundant discharge of muco-purulent matter from the urethra. An elastic gum catheter, about a medium size, was passed easily into the bladder. This was allowed to remain in the bladder, and was only withdrawn to be cleaned. After a short time it produced irritation, and had to be removed. He appeared greatly worn out in his strength: complained of pain in the loins, and had frequent desire to pass his water. At length he was seized with frequent sickness and vomiting, and he had diarrhœa alternately with constipation: his strength being in this manner exhausted, he died.

Dissection. The bladder was remarkably thickened and hard; its coats measuring nearly three quarters of an inch: it contained about three ounces of urine. The internal surface was black as coal, yet it retained its natural smoothness. The rugæ were very distinct; a sacculus was formed close to the opening of the left ureter; but it was only of small size. The muscles of the ureters were unusually prominent. The cellular membrane around the neck of the bladder was so much condensed that it cut like leather. The prostate gland was of its natural size, but its ducts were enlarged, and one of them had obviously been preternaturally dilated by its having caught the point of the catheter, for a probe could be passed along it under the membrane for half an inch. The ureters were both greatly dilated, and the cellular membrane around them was condensed in all their course from the kidneys to the bladder.

Both kidneys were lobulated and sacculated :—and the pelvis and infundibula were much enlarged. There was some appearance in the right kidney of abscesses pointing on the external surface. The cellular membrane was remarkably condensed around them both, making it difficult to remove them.

The urethra was considerably dilated posterior to the seat of the stricture and the fistulous opening. The fistula opened immediately behind the stricture, which, when divided by the knife, was found to be nearly as hard as gristle. The stricture occupied about half an inch of the urethra. The orifice of the fistula towards the urethra was as hard and callous as the stricture or more so.

Stricture, with Lacerated Urethra and Distended Bladder.

I have before me the house-surgeon's case-book, from which I am about to read. He promises me an abundance of cases of stricture, and disease of the urethra and bladder, if I will only defer the subject ; but I shall be satisfied to-day with one case, which brings, I think, the whole question of practice before you, and in a very impressive manner. Before I read this case, let me beg you to consider two conditions of the bladder, apparently very distinct, and in contrast with each other, yet both proceeding from the same cause—stricture in the urethra. What, apparently, can be more distinct than a distended bladder arising above the navel, or even as far as to the scrobiculus cordis, and a bladder so contracted, that its cavity is not larger than that of a walnut, and its walls so firm and condensed, that in old surgical books it is called scirrhus of the bladder, which scirrhus I hope you understand to be, the density arising from frequent and powerful muscular contraction. These two conditions, arising from the same cause, do yet present very distinct symptoms. Is the practice, then, different ? Let us inquire.

With regard to the first, viz. distention of the bladder, you have before you a case which exhibits the extraordinary torture which the patient endures from it ; and you must be anxious to know what would be the result if the patient were left unassisted. There might be rupture of the bladder ; and observe, the bladder may be ruptured in two ways :—If a

person with a full bladder is thrown from the top of a coach, of which we have had several instances in patients brought into this hospital, the coats may be actually ruptured, and the bladder rent from the fundus to the neck ; but when rupture takes place purely from over-distention, which is the case now to be considered, the appearances on dissection are these :— There is a small pin-hole, or perhaps two or three small holes, with black and ragged edges, near the fundus, and the bladder itself is found relaxed and empty, whilst the abdomen is full of urine. It is not then, properly, a rupture, but something more like that ulceration which takes place in the urethra, and lays the ground-work of fistula. It is owing to the excessive distention that ulceration takes place, so as to weaken the coats, and then the urine bursts through them. When this happens, the patient feels as if he were passing water, yet no water flows. By and by, instead of the round firm tumour which was felt in the belly, there is a general tumour, and an undulation, implying that the urine is abroad in the cavity of the peritoneum. In the mean time the patient is probably delirious, and in that case a man will put a pistol to his head, or throw himself out of the window ; such cases have been narrated to me. The only instance which I remember coming under my own observation, was one where the delirium arising from this source assumed so much the character of mania, that a physician from a madhouse was brought into consultation. This was great ignorance, and to the effect of aggravating the suffering of friends ; for is it not an additional pang to be led to believe that a son, or brother, has died maniacal ? Such is sometimes the condition of a person with a distended bladder unrelieved.

When there is a stricture, and a sudden obstruction comes on, distention takes place ; but when there is a stricture without such sudden and abrupt obstruction to the urine, the bladder makes powerful and frequent efforts to relieve itself ; and these continuing, cause a thickening of its coats, and a diminution of its cavity, and from which, of course, arises a necessity for still more frequent calls. The patient is obliged to rise sixteen or twenty times in a night ; he is at last continually on his knees, with the *pot de chambre* between his legs ; he

makes, perhaps, half an ounce of urine at a time, and that with such continued effort, and such protracted pain, that fever and irritation arise, and he will die with effusion on his brain. Mark, then, I beg, because it leads to an important conclusion in practice, how a narrowing of the urethra will at one time produce a sudden distention, such as we have just seen, and at another a condition of equal danger, but more insidious, in which the state of the patient is not so apparent, and yet the danger is imminent. You will readily acknowledge, that from either of these conditions a patient must be immediately relieved; that there is no time nor opportunity for gentler means; it is only an operation that can save him. I will now read the case of distended bladder.

Stricture with Lacerated Urethra and the Operation.

“A man of colour, of the name of Wallis, came to the hospital about half-past twelve, groaning most piteously, with retention of urine. Blood was flowing from the urethra, and it appeared that a surgeon had been called, who had attempted to pass a catheter for him, but had failed; and that the attempt to relieve him by operation had been followed by a great flow of blood. The surgeon then administered a dose of castor oil and laudanum; but the attempts by manual operation failing, he bled him and sent him to the hospital. When he came to the hospital, a wax bougie was passed down to the stricture and withdrawn, but no urine flowed;”—that is a practice on which I shall make some remarks presently:—“he was therefore immediately placed in the warm bath, but still no urine flowed. The finest silver catheter was attempted to be introduced; the point entered a very narrow stricture, but it could not be carried forwards; and below, a little to the left of the stricture, an extensive tear was felt in the membrane of the urethra. It was only by avoiding this, and keeping the point of the catheter close to the upper part of the urethra, that the point of the catheter could be directed into the stricture. No urine came, and the bladder being now very much distended, and the fundus having risen to the navel, was as tense as a tennis-ball.” Such was his condition; and the narrative goes

on to state—"that it was about twenty years ago that this man first suffered from an obstruction of urine; that he was then on a voyage to China, and, if we understood him aright, the water was drawn off by the use of a bougie. For several months past he has suffered much from stricture; he was obliged to rise frequently in the night, and on making water, it flowed in a very small stream. When he did desire to make water, if he did not immediately attend to the call, it would come away only in drops; however, up to this time he had always been able to do without an instrument, till the morning in which he was brought to the hospital.

"The case was becoming very serious, and the surgeon of the week was asked to see him whilst in the warm bath. He ordered him to be put between blankets, and carried to bed; and he then attempted to procure an impression with a soft bougie of the state of the stricture. He then introduced the catheter, but said he felt the point of the instrument out of the canal. A consultation was then held, and the attempt was made to pass two or three catheters of different sizes and curves, but in vain. On examining per anum (the house-surgeon continues to state), the lobes of the prostate were felt distinctly, the gland healthy, the bladder tense in front. In the consultation, the question was mooted, whether the bladder should be punctured by the rectum, or the membranous part of the urethra opened from the perineum. The only objection to the latter method was the possible difficulty of introducing the catheter from the wound into the bladder, and the possibility, therefore, of the sphincter of the bladder still resisting, and the bladder remaining distended. It was determined that the latter operation should be performed; but if there were great difficulty of passing the catheter, that the bladder should be punctured in the wound, as it was declared necessary to relieve the patient immediately."

Now the house-surgeon has properly put down "*instruments prepared for the operation*—lithotomy-tapes, elastic catheter, grooved sounds, directories, probes, sharp-pointed bistoury, tenaculum, bandage around the waist, trocar." In preparing to perform an operation, you ought to have every thing that can by any possibility be required. It is an un-

pleasant occurrence to be foiled in the first attempt, and then have to call for instruments which are not forthcoming, and which shew that something has occurred unexpectedly, and for which no preparation has been made.

“ The patient was taken into the theatre, and placed on the table in the posture for lithotomy, and secured in the usual way. The finger of the left hand was introduced into the anus, and the point of a sharp-pointed bistoury was thrust through the skin, about half an inch in front of the anus, exactly in the central line. It was carried at once into the membranous portion ; the handle being then depressed, the point was pushed on, so as to come out through the skin, about an inch and a half in front of the part where it entered. By this the corpus spongiosum of the bulb must have been cut. The moment the bistoury cut itself out, a gush of urine followed, which covered the operator. The moaning of the patient immediately ceased ; he seemed already relieved. After a time the catheter was put into the wound, and slipped at once, with the greatest ease, into the bladder. The whole operation together did not occupy half a minute. The urine continued flowing in a full stream, and about two quarts were evacuated through the tube. There was some arterial bleeding ; but the loss of a little blood was considered as an advantage. The catheter was secured in the bladder, and the patient sent to bed. The surgeon, clapping him on the shoulder, said, ‘ Now, my man, you shall go to bed, and have an opiate, and be comfortable ;’ on which he thrust his head out of the blanket, saying, ‘ Sir, I am in heaven,’ and drew it in again like a tortoise. His relief was so perfect, that he presently *fell asleep on the table.*” Was this really so, gentlemen ? I was obliged to leave him, and knew not the circumstance : however, nothing can so fully demonstrate his previous suffering and exhaustion, and the complete relief. For my own part, I have never seen this, except where I have operated on the trachea.

“ When he became warm in bed, the bleeding increased considerably ; and in a quarter of an hour he bled to sixteen ounces : it was arterial, and came by jets, but after the house-surgeon had searched some time, no vessel was found. It

could only be commanded by placing the finger on the cut through the bulb. A small ball of lint, with a string attached to it, was placed there, another larger one over it, then a piece of sponge, and two large compresses, with a bandage over the whole; and this completely commanded the bleeding, without obstructing the catheter. The wire was passed to ensure that the catheter was quite clear. The pulse strong, and full enough. He had lost about twenty ounces of blood.

“Eleven P. M.—No more bleeding; the stilette again passed; all but the two lower compresses removed, for fear of too much obstruction to the urine, and that the catheter should get choked in the night, and so inject all the cellular membrane.

“31st.—Passed a good night; pulse full, rather variable; no pain in the abdomen; urine trickles freely from the instrument as it is secreted. Poultice to the wound.”

REMARKS.—1. Now you have heard the case, and you will not accuse me of a want of decision, nor an unwillingness to operate when the occasion calls on any idea of the difficulty to be encountered; and therefore I take this opportunity of strongly impressing upon your mind, that if I seem unwilling at any time to operate, it is from another reason, than any distrust of my hand. And further, I take the opportunity to assure you, that though you have seen me, with a knife, cut at once into the perineum, yet in general practice, gentlemen, perseverance, repeated slighter efforts, are the sure modes of curing stricture in the urethra; and not one case in five hundred requires any such means of relief. True it is the time may come when you require decision and a bold operation, such as you have seen me forced to perform; and as it may become necessary, you ought to prepare yourselves for its performance. But if time be afforded for gentle means, they are much to be preferred, and are surer to be successful;—I mean in cases where the stricture has not been abused.

2. The next question that arises is, What is the nature of this obstruction? Is it altogether mechanical, or is it partly mechanical and partly nervous or spasmodic? You must remember, that if a person have his bladder surcharged, though

there be no obstruction at all, it will cease to act. I have this morning drawn off two quarts of water from a gentleman's bladder, where there was no difficulty whatever in passing the largest catheter, for I used the largest catheter purposely ; but the bladder had been over distended, and consequent upon that there was paralysis—or at least, if not paralysis, a want of consent between the detrusor of the bladder and the muscles in the perineum. You no doubt remember that the neck of the bladder and the urethra have around them the compressor prostatae, levator urethrae, and the ejaculator seminis, besides the columns of the levator ani. All these muscles must relax before a drop of urine comes, and any spasmodic action in them directly obstructs the passage, whilst it hinders the contraction of the bladder itself. The contraction of the one set of fibres, and the relaxation of the other, belong to the same act, like the condition of opposing muscles in the motions of the limbs ; so that if the bladder be not in a state to execute its functions, these muscles are not in a condition to relax. It would be easy to illustrate this by the state of the stomach, the rectum, the uterus, or any hollow viscus. When a man has a stricture, and passes his urine with difficulty, being in the condition that this case describes—that is to say, unless he immediately attends to the call to make water—he will soon be unable to void it at all : he is liable to have his bladder surcharged ; and no sooner does it become distended, than the fibres at the cervix become spasmodic. Then the bladder fills more and more, till it rises, and may be felt in the abdomen, and so it may rise to the umbilicus, or even to the scrobiculus cordis. You perceive, then, that although the original cause—the stricture—be a mechanical obstruction, there is superadded a cause *spasmodic* ; and it is the management of this spasm that demands your attention—not the immediate cure of the *stricture*. This is the reason why the soft bougie was used, as the man describes in his case, and why it was again attempted when he was brought into the house. By passing the wax bougie, with the end softened, into the stricture, letting it remain there, and slowly withdrawing it, calling upon the patient at the same time to make an effort, and gently pressing the abdomen, the urine will sometimes flow ;

and when it once begins to do so, it continues. You understand, also, that it is for the same reason that the patient is bled, and put into the bath, and has a strong opiate administered.

3. It is a common question with us, when examining whether a pupil or a dresser be fit to be made house-surgeon, to ask, what he would do when a man comes in with obstruction of urine? You see how necessary it is that he should be perfectly aware of what ought to be done, because such cases are occurring almost every day; and if he makes a mistake, and passes a catheter at an improper time, the case before us declares with sufficient emphasis, what are the unhappy consequences. It is expected he should reply, "I would consider from what the obstruction proceeded. If he were an old man of seventy that presented himself, I should suspect the prostate, and examine that first, to see if it were enlarged. If he were a young man, I should ask him if he had been the subject of gonorrhœa, of discharge from the urethra, and if the discharge had been suddenly suppressed," because when the inflammation of gonorrhœa is suddenly checked, that inflammation has shifted backwards; the discharge has not merely ceased, but the inflammation of the urethra has increased, and very often it is the violence of the inflammation which stops the secretion. There is a certain degree of inflammation which promotes discharge, but a little less or a little more suspends it; and when gonorrhœal inflammation has increased to a considerable degree and crept back to the neck of the bladder, pain and spasm take place of the discharge. We should therefore require the house-surgeon to consider whether the obstruction arise from inflammation, and consequently spasm and impediment to the action of the bladder, or to stricture. I should expect him to say, "I must consider whether the patient has not got a stricture, for although I might draw off the water from an old man with an enlarged prostate, yet I am aware of the danger of attempting the same mode of relief where there is a narrow and irritable stricture;" and I should expect him to add, "whichever of these three causes the distress arose from, I would be careful in passing the catheter." As surgeon to a public institution, I should especially require

attention to ascertain the nature of the obstruction, with reference to these three questions, before I would say he was a safe man.

4. In such a case, then, as I have read, where the history tells us there is a stricture, and the surgeon who first attempted to overcome it has ruptured the urethra by allowing the point of the instrument to get out of the right canal, we are precluded from doing those delicate operations which require repetition, and therefore time, to be effectual. When the point of the catheter has lacerated the membrane of the urethra anterior to the stricture, there the bougie will hitch and fall on every repetition; so that you are not only prevented from gradual dilatation, but even from that milder mode—gentle insinuation of the bougie, in order to induce relaxation of the spasm. Now comes the question home to us: where the bladder is rising, the torture extreme, and delirium is coming on, what is to be done? Is the bladder to be punctured, or are you to perform an operation on the perineum? I would say, the bladder is not to be punctured unless in some extreme cases, where the patient is so far gone from distention and inflammation, accompanied with long continued agony, that a little further delay will destroy him; and where he has not only suffered much and long, but where there is a great complication of disease about the neck of the bladder. If a patient in this condition be put upon the table, and you commence an uncertain operation upon him, keeping him half an hour or an hour under repeated incisions, and poking with probes, and ineffectual endeavours to pass the elastic gum catheter into the bladder, he begins to vomit: the stomach sympathizes with the general suffering: and when he is put to bed he never recovers, he falls into a doze or low delirium, and you have destroyed him by prolonging the excitement or irritation. You have thought by your dexterity to relieve him, but you have failed in your expectation in that—you have erred in judgment, and your patient is lost. In such a case it may be necessary to pass the trochar into the rectum, and from thence into the bladder, and without pain, without irritation, without delay, to relieve him. But these are rare cases, and it is better to cut in the perineum, because you not only

relieve him, but lay the foundation for a perfect cure. Still, however, much will depend on his condition.

I remember when it was a regular question (I need not say where), How long are you to wait before puncturing the bladder? You perceive the degree of distention is no criterion; because, after the bladder is distended to a certain degree, the urine drips away continually; and therefore a man may have a distended bladder to-day and may not be worse to-morrow, in consequence of the bladder permitting the surcharge to drip away. I need not remind you that an ill-educated surgeon is apt to be mistaken here just as the patient is. A patient calls you to his aid for *incontinence* of urine, but, upon examining the case, you soon find that he labours under retention; that notwithstanding the water is dripping from him constantly, some pounds of urine are accumulating in the bladder, a source of painful inflammation. My object in stating this, is to shew you that it is the degree of suffering which, after all, must determine us. A bladder which, in consequence of stricture, has become so permanently contracted that it has not for many months contained more than two ounces of urine, must give excessive distress, and cause inflammation if distended; when a natural bladder will suffer greater distention without so immediately producing inflammation.

The degree of suffering, the roundness, firmness of the distended bladder, and tenderness of the abdomen, are our best indications. I would say, that when once you feel the bladder above the pubes, like a round ball under your hand, as tense as it is described in this case—the pulse excited, and the man's mind excited, in an extraordinary degree—you must adopt the same rule as in hernia: *not to leave the house till he be relieved.*

5. Now comes a question of extreme delicacy, as it is to be expressed before you, and touching an operation of extreme delicacy; I mean forcing the stricture with a catheter. I acknowledge that I have a narrow-pointed catheter; not sharp, but small, round, and smooth; with which I have sometimes saved the necessity of a more formidable operation, by passing

it through the stricture. But it is to be done with fear and trembling ; because, although you may succeed in putting the man (as this patient said) " in heaven,"—and I have heard the expression before—yet, on the other hand, you may rupture the urethra. In performing the operation, you must place the patient fairly before you, take care that the instrument is exactly in the centre, introduce it down to the stricture, put your finger in the perineum, and try to get the point of the instrument into the stricture. If you can feel it in the stricture, and, on attempting to withdraw it, find that it is held, you may be certain that it has not passed in a false direction ; and then by slowly going on, and gently driving the instrument forward through the stricture, at the same time drawing the integuments of the perineum forward, and then introducing the finger in ano, and so carefully watching the progress of the point until it gets into the enlarged part of the urethra, you may thus save the patient. But I need not remind you of the danger of the operation ; the case I have read sufficiently shews it.

5. With regard to puncturing the bladder, it may be done above the pubes, by the rectum, or by the perineum. But I have already stated that it is only in extreme cases, when there is much disease, and the person is just, as it were, upon the brink of running into a state of inflammation and fever, and delirium, that you can think of puncturing the bladder: the more legitimate operation is that which you have seen performed, or heard described.

When we speak of an operation in the perineum, the first thing to be thought of is cutting the stricture. This is an operation of difficulty : see how it is done. The patient is placed on the table, as for lithotomy ; the incision is made in the perineum, and a grooved staff is passed down to the stricture, and the point cut upon, by which you get it into the urethra anterior to the stricture. You then pass a fine probe from the anterior part of the stricture, through the stricture ; and if you succeed in this, the operation is easy, for then you have just to feel the probe with the knife, and cut along it. When a patient has suffered what I have described, that part of the canal behind the stricture is enormously enlarged, and

we have no difficulty there ; the difficulty is in striking the stricture, and if you cannot get a probe through it, you must divide the callous part without a director, the object being to get into the enlarged part of the canal ; you then pass a catheter through the penis, across the stricture, into the posterior part of the canal, and from thence into the bladder. The wound is then to be healed over the catheter. This is a pretty operation, when adroitly performed. But I say again (and I think many here have seen the operation attempted both in my hands and those of others), that it may be a tedious and uncertain operation, and is therefore not to be inconsiderately undertaken : you must be certain that the patient can bear the continued fingering, teasing, and cutting.

I have, then, to direct you to what you have just seen : the operation of cutting into the urethra posterior to the stricture. I have performed it (and I believe other surgeons have done the same) in a different way to what you have now seen—viz. by a cut of the scalpel upon the face of the perineum. Why have we changed the mode ? I will tell you why, and it is important that you should know it. If you have a small gland to cut out about the breast or axilla, you feel it very distinctly through the skin before you begin ; but when you have made your cut upon it, and when you have got your fingers among the fatty membrane, you cannot find it—it seems to have disappeared, and you dissect at random. It is very important to remember, that you can distinguish such a body outwardly, before the incision is made, much more easily than when you have cut through the skin and are closer to it. So it is in respect to the parts in the perineum : it is possible, by introducing the finger into the anus, to distinguish the prostate, its two lateral lobes, its centre, where the membranous part of the urethra enters it ; and this in a manner much more distinctly than when a cut is made through the integuments and the finger is in the wound of the perineum. Recollecting the difficulty of hitting the urethra after a deep incision, or of feeling the prostate among dissected parts, I thought it would be better if I put my finger in the rectum, to see that I was exactly in the centre, where the urethra traverses the prostate ; and I then passed the sharp-

pointed bistoury, directed by the finger (although the walls of the rectum were between the instrument and the finger). Besides you have here, in this mode of operating, a great advantage in the steadiness of the patient. When you pass a narrow bistoury through the skin, it is not more painful to him than the puncture of a needle ; and when it is introduced, you can direct the point of it with great nicety. And now observe, when you think the point of the instrument has struck the membranous part of the urethra, depress the hand, and bring out the point : by this the bulb of the urethra is cut, as it is very properly stated in the case.

You will please to observe, that the incision of the bulb being in the very central line, we do not touch the larger branch of the artery, as we do in cutting for the stone. Were it at all an object, I could introduce the point of the knife and carry it round the prominence of the bulb ; but I do not think there is sufficient reason for this, seeing that it is my principal object to have a free wound ; that is, penetrating to the urethra, but large outwardly.

It has been stated that the patient ought, in this circumstance, to lose blood ; and he cannot lose from any part with greater advantage than from the bulb. This mode of operating relieves, whilst it is laying the foundation for a permanent cure.

I shall conclude by giving some advice to the house-surgeon. How is he to perfect the cure in this case ? He is to begin to work upon the stricture ; and let me remind him, that if possible he is not to destroy the natural membrane of the urethra. If you remove a stricture by caustic, or cutting, or by destroying the natural membrane, and substituting another, the latter never answers the purpose perfectly, or at least permanently. The natural membrane of the urethra is elastic in the finest degree, yields to the push of the urine ; but if you have formed a membrane out of the cellular texture by condensation and inflammation, it has always a disposition to contract, and you have got a patient for life—that is to say, the man must always come back to have his stricture dilated. It is cruel to the patient, and putting yourself in a questionable position with regard to the honour of the profession to

act thus, and therefore avoid it. I repeat, then, that the house-surgeon must, by gentle means, try to *dilate* the stricture—try to cause absorption of the coagulable lymph outside the membrane; and when he can pass a considerable instrument into the bladder, he will withdraw the tube from the wound, introduce a catheter along the penis, past the incision, and into the bladder, and so heal the external wound over it.

But again, if he feels unusual difficulty in the introduction of his bougie into the stricture, he will have to reverse the introduction of it, and passing it from below, prosecute his cure in that direction. I should regret the perforating the stricture; but if it must be done, it will be performed with comparative ease, when an open tube is pushed up to the stricture from below, whilst the perforator is introduced from above. I believe you are pretty well convinced, from what is passing around you, that the complaint of stricture is common enough to deserve all your attention.

Extra-Uterine Fœtation, causing Stricture of the Rectum.

27th July 1826.—Mrs W. This lady, on her deathbed, ordered that her body should be opened, and the account of appearance transmitted to Sir Charles Bell.

In September last she came to town, having a letter from her medical attendant, descriptive of her complaints. They were the symptoms of stricture in the rectum. She attributed their commencement to a bruise on the side, from having been overturned in an open carriage.

No stricture could be felt with the ball-probe. The probang was used, and it was obstructed in the higher part of the rectum, opposite to the promontory of the sacrum; and, on the whole, Sir Charles Bell gave it as his opinion, that the distress, distention, and apparent torpor and irregularity of the bowel, was owing to a fold of the sigmoid flexure of the colon checking the easy descent of the fæces. Laxatives, clysters, and friction of the belly, gave her relief.

Some few weeks ago, a consultation was transmitted to London for Sir Charles Bell and Dr Merriman's consideration, on account of an interruption to the menses, attended with great pain in the loins.

When her complaints increased, and she was forced to take to bed, she said to her friends, "When I last consulted Sir Charles Bell, he said, I must find some other disease to die of, for my complaint was not of a nature to take my life. I have, then, got that disease, for now I am to die."

Her pains increased; she became sick, and ghastly pale; her strength rapidly declined; and she died.

On examining the body, the abdomen was found full of coagulum of blood, and that blood had come from the ovum of an extra-uterine foetus, which had burst the membranes.

A preparation, now in the College of Surgeons, Edinburgh, exhibits the rectum, with a slight stricture at the last turn of the colon, as it terminates in the rectum.

This case, even in all its minute circumstances, is not solitary. In my collection there is a preparation exactly similar—an *extra-uterine foetus* pressing upon the rectum, and producing obstruction. May it have happened thus? The original mischief was from the fall and the bruise of the side. The *Fallopian Tube* being engaged by adhesion to the rectum, in consequence of the bruise and inflammation,—when conception took place, the action of the Fallopian tube to deliver the ovum into the cavity of the uterus was interrupted; consequently, the ovum remained in its original seat, and hence the catastrophe.

The parts, as I have said, were transmitted to me. The ovum was burst. The uterus exhibited the decidua formed in the inside of that body. The uterus was enlarged, and the os tincæ changed in form. Thus, we see that the pregnancy produces a simultaneous excitement and change in the uterus; and that this change, and the production of the *decidua*, are independent of the *presence* of the foetus within the uterus. The mass adhered to the rectum just at the brim of the pelvis.

CRUSHING THE STONE IN THE BLADDER.

I propose to-day giving you a clinical lecture on crushing the stone in the bladder. We are bound to address you on this subject by every motive that can actuate the humane mind. There is no torture which a man suffers greater than

that from stone in the bladder ; and there is no duty which you will have in after life to perform so oppressive, as that of the operation of lithotomy ; for although in favourable circumstances it is safely done, yet, while any obscurity hangs over the condition of the patient, as to his constitutional peculiarities, or as to the size of the stone, or the state of the bladder, it is not without danger. But independently of these reasons, I say we are bound to draw your attention especially to this subject, since the very house over our heads has been built at the expense of those who have taken our promise to attend to the methods of removing the stone without cutting.

First, then, how stands the opinion regarding the operation of lithotomy. You may have heard patients declare that they would rather suffer the operation for the stone twice over, than bear the torture from its presence for one night. You may have heard them say that the operation of sounding for the stone is more painful than the operation of cutting.

The incisions for lithotomy, performed by a man properly educated as an anatomist and surgeon, are simply and quickly made ; but in regard to the extraction of the stone from the bladder, it should be done very *very* slowly, and consequently the rapidity with which an operation is performed is not the mode of judging of the merits of the operator. There is not an authority in our profession who has not declared against judging of an operation by the time. The taking out of a stop-watch is an indication of improper education. In a late operation performed in our theatre by our assistant, I have understood that the watch was looked to. That indicates both bad teaching and bad example, and would almost incline one to believe, that these individuals had come to see the operation ill performed, instead of witnessing it carefully and well performed, in the mode they ought to imitate.

Still, gentlemen, these deep incisions, made on one's-self, who can contemplate without shrinking ? and therefore it is of incalculable benefit to have an operation in which these incisions are not necessary. The advantage is this,—that when a man entertains a suspicion of stone in the bladder, he comes at once to his surgeon ; whereas, heretofore, he would not allow himself to believe that he was so unfortunate. He lets time

pass ; he is unwilling even to be sounded, lest his worst suspicions should be confirmed : time passes, the stone gets to be of a large size, and then, indeed, there is danger from the operation of lithotomy. You have no notion how men shrink from the certainty that they have the stone, and linger on suffering from irritation until it is unbearable ; and then, when the stone has acquired a great size, they are forced to submit, in unfavourable circumstances. Therefore I say it is of incalculable benefit to society, and to us especially, that there is an operation, simple and safe comparatively, which is offered to the contemplation of these sufferers, and which brings them earlier under cure. Let us, then, give our whole attention to this subject.

An unfortunate idea prevails, got up upon this occasion I know not on what authority, that we have been all along under a misconception, and that the urinary bladder can bear a great deal more injury than we have imagined.

On this head I beg your particular attention. I have at various times pressed upon you the difference of sensibility in internal and external parts. I have shewn you that internal parts—the viscera—have their peculiar sensibility, and that it is totally different from that of the surfaces. But there is more than this : suppose that you are examining a patient with diseased liver, or under the suspicion that he has diseased liver. You lay him down, relax the abdomen, and press along the margin of the ribs, and feel the hardened edge of the liver. You ask him if he has no pain on this pressure ; he says “ No.” Or if, not feeling the liver, you press down the cartilages of the ribs to ascertain if there be morbid sensibility, indicative of inflammation, still he says that he suffers no pain. But by and by, when he sits down, and proceeds with the narrative of the disease, he becomes pale, speaks with difficulty, and tells you that he is now in great pain. There is a peculiarity in the sensibility of the liver different from that of the external parts ; but it rises slowly after pressure. In the same way, to bring us nearer to the subject, if you are examining *per anum* the state of the prostate gland with the finger, and press all around to find if there be sensibility, or any mark of disease there, and you ask the patient—“ Have

you pain here—have you pain there?” he says “No.” But when you have withdrawn the finger, and after the examination has been finished some time, the patient begins to complain of the dull sensation which arises, and becomes at last very painful. So again, with regard to the bladder, but more especially its neck; there is a certain pain, no doubt, felt by the patient during the introduction of the instruments; but all the effect of the interference with the internal part is not shewn during your operation, but after it; so that if you are not careful, light of hand, and delicate with the patient, you are called back in the afternoon of the day, and there you find him in a paroxysm of suffering, cold and shivering, the bed shaking under him, and he is in a state most alarming to himself and his friends. Hours have passed, but the paroxysm is the indication of the injury you have in the morning committed upon the neck of the man’s bladder. Do not, therefore, be deceived by this sort of new aphorism got up, that you may do a great deal more injury to the bladder without inconvenience, than has been hitherto supposed; it is an entire mistake.

For the history of the operation of crushing the stone, you must go elsewhere. It is a long history, which I cannot undertake to follow up so as to appropriate the merit of the discovery to the right individuals. But when the operation was first performed in this country, they brought me an instrument similar to that which I now shew you, but larger and stronger, and of which this might almost be said to be the model, for this is intended for a child. The instrument you perceive is straight; and here is another grand discovery, that you can pass a straight instrument into the urethra. This you certainly can do, but I fancy that, as anatomists, nobody will convince you but that there is a curve in the urethra, and although you can pass a straight instrument, you do certain violence to the curved urethra, more especially to the neck of the bladder. When I saw this instrument first, I said, “It appears to me a most dangerous instrument; you see that it is a tube from which certain blades possessed of elasticity can be thrust out, and which, by their expansion, are prepared to seize the stone. I remarked, “Suppose you get hold of the

stone, and cannot break it, how can you withdraw the instrument?" The answer was very ingenious: "There is a wire to pass through this tube, which projects against the stone, and displaces it from the grasp of the forceps." That is good, it is ingenious; but suppose that we have got hold of the stone, and that by attempting to crush the stone, instead of effecting our object, the ends of the blades of the instrument bend, and are permanently expanded, what is then to be done? There was no answer to that question, except that it was not likely to happen. But it did happen:—it has happened not once, but several times. How often it has happened, and how often patients have died under this operation, and from what immediate causes, I am unable to state; and yet these misfortunes should be recorded. Several, I know, have died; but I shall speak of one case, of which I was a witness.

A much-respected gentleman had a stone in his bladder: he was unwilling, as most patients are, to suffer the operation of lithotomy, and called to his assistance the Parisian operator. He proceeded to his operation; he seized the stone, but in pressing down the instrument, the blades did not break off—that would have been of less consequence—but they became permanently expanded, and in this state the instrument was withdrawn through the prostate. (Think of the effects of withdrawing such an instrument through the prostate!) It was brought into the membranous part of the urethra, but farther it could not be withdrawn! What was to be done? There was a call for a pair of blacksmith's forceps—strong pincers; then the patient was placed as for lithotomy, the perineum was cut into, the bulb of the urethra opened, and the forceps applied to the blades to squeeze them together, in order that the instrument might be withdrawn along the urethra. Dr Hume and Sir B. C. Brodie being in attendance upon the operation, said, "Here is the incision as for lithotomy, why not proceed, and finish the operation?" They knew well, and you ought to know, and remember it, that an ineffectual operation for lithotomy, the stone remaining in the bladder, is generally fatal, because, in addition to the violence of the operation, there is permanent irritation from the presence of the stone. They determined that the stone should not re-

main in the patient's bladder ; and so Sir B. C. Brodie, with characteristic decision and ability, immediately sent for his instruments, and performed the operation for lithotomy. It was after this period of the case that I was called in, and I saw that gentleman suffering gradual decay, in consequence of the severity of the operation—first, from the introduction of the instrument ; secondly, from the operation of seizing, and the attempts to crush the stone ; thirdly, from the violent withdrawal of the dilated instrument through the prostate ; fourthly, from the incision into the bulb of the urethra and the formidable hæmorrhage ; and fifthly, from the performance of the common operation of lithotomy. Can you wonder, then, that after lingering some weeks, the patient finally died ?

So far, then, I maintain I was right in my conjecture regarding this instrument. It is a most villanous and dangerous instrument ; and if you have been tempted to buy it, keep it till you grow rich, and give it to your butler to draw corks from a bottle.

With regard to the patient in the hospital, you see an old blind man suffering severely from the stone. On sounding the man, and dodging the instrument over the stone, I calculated that there was a stone about the size of a chestnut ; and remarked that, if we are ever to perform this operation of bruising the stone, here is the instance ; and I was prompted to think that I could do it (pardon me for saying so) with as light a hand, and with as much regard to the patient's feelings, as I had seen the operation performed ; I performed the operation at three different times, and he is now discharged, well.

The operation is this :—In the first place the bladder must be injected, and for this reason, that the stone is apt to lurk between the fleshy columns of the bladder. When the bladder is irritated by the presence of a calculus, fleshy columns arise, formed out of the fibres of the detrusor urinæ ; by dilating the bladder you separate these, as it were, and force the stone out of the recesses between the columns ; and then again, in catching the stone, you are in no danger of including the folds of the bladder when it is distended. That is the reason

of filling the bladder with tepid water. In the next place, you lay the patient so that the stone falls a little to one side.

I have said, in speaking of lithotomy, that the surgeon who sounds dexterously will perform the operation well, because, by sounding well, he calculates the depth of the bladder, and the actual position of the stone, and he can get the stone to that recess where he is sure to strike it. If he acquire a proper notion of the position and size of the stone, the operation of lithotomy is comparatively simple. So also he that can discover the stone with little pain to the patient, is likely to succeed in this operation (not forcing in the instrument, and striking with violence against the stone, but rather, by turning the patient, bringing the stone by gravitation into contact with the instrument). I say that the surgeon ascertaining thus the actual position of the stone, will perform the operation of catching it and crushing it easily.

As to the instrument which you are to introduce to crush the stone, this which I now present to you is it. You see at once that it is a totally different instrument from that which I before shewed you. There is an advantage in the curved form ; it may be very easily introduced into the neck of the bladder without inflicting pain. But the greatest advantage of this instrument is its strength. This instrument is the invention or the improvement of a person who certainly will not hide his candle under a bushel ; and he is quite prepared to stand his ground with any inventor in Paris or elsewhere. Notwithstanding there is a sort of conceit about him, yet I value the instrument on account of its form and strength ; for I repeat, I care not so much about breaking the instrument, as the fragment can be withdrawn with the stone by lithotomy ; but bending the instrument is the most formidable thing, inasmuch as we can neither let it remain nor withdraw it without a rude and painful operation. Indeed, all these instruments should be proved like a piece of ordnance before they are used. Now, observe how it is to be used. If, for example, the stone be of the size of a walnut, we must then prepare that the blades shall separate to that extent. Having introduced the instrument into the bladder, and turned it to the side on which the patient lies, and felt the stone, you slowly

open the blades by withdrawing the upper one thus ; and perhaps you feel the patient flinch a little. You saw that as soon as I had chucked upon the stone, it was immediately seized. There is not the slightest difficulty in this part of the operation, neither is there pain if you do not open the instrument suddenly, and to a great extent. Take time, do it delicately and nicely, and there is neither difficulty to you nor pain to your patient. During the operation, I was desirous to know what pain was inflicted by the operation. I requested the patient to tell me whether he was suffering pain. " Oh," said he, " I cannot expect to get rid of a stone in the bladder without pain." " Nay ; but, tell me," I replied, " how do you feel—are you suffering much pain?" " Oh, you know there must be pain." But he never winced,—never moved a muscle, never interrupted his chat,—and therefore I must presume that the man was not suffering ; for, if he endured pain, he must have had extraordinary fortitude neither to wince, nor cry, nor even to change his voice, but readily to converse with me during the operation.

When the stone is seized, you can move the instrument to any part of the bladder you choose. You cannot, by pushing down the button attached to the sliding blade with your finger, crush the stone ; but there is a screw, having great mechanical power, and you must use it, not by turning it uniformly, but by bringing it back again, and so working it as to grind the stone gradually, and by distinct blows. By this means you break the stone down as if it were bruised with a hammer ; and it is not so apt to break and fly by each successive impulse as by screwing down the sliding blade at once by the mechanical power of the screw. The stone being thus crushed, and a great portion of the fragments being brought out in the grasp of the instrument, it is so far satisfactory. It will sometimes happen that the stone will remain, choking up the instrument, and you can with difficulty get the blades together. The meaning of this slit, which is otherwise to be regretted, as weakening the instrument, is to let the *debris* be forced through. You calculate, from the position of the sliding ring along this scale, how far the blades remain apart ; and they must be brought nearer, almost together, before you

attempt to withdraw the instrument. There is a part of the operation here which I like, as being ingenious ; a vice having attached to it a heavy mass of metal, is screwed upon the shaft, which belongs to the further and fixed blade, and then the other shaft is struck down with smart blows of the steel hammer, until the upper blade is so far pressed upon the lower that the instrument can be withdrawn. What is the meaning of this appended mass of metal ? There is a *vis inertiae* in it ; and accordingly, in striking the instrument, instead of endangering the bladder, the impulse is resisted by the appended mass, and you can therefore give a smart blow without any shock.

Is it not an admirable thing to bruise a stone into these fragments [handing round a bottle containing them] ?—and does it not appear to you a very simple thing ?

But you have not yet considered the source of pain and danger. The operation, I say, is not a painful one, but the consequences are sometimes very formidable. In the first place, there is a great uncertainty of getting the stone altogether away ; there is a possibility of some fragment remaining, and if it should, there is great pain, and another stone will form upon it as a nucleus. I was consulted by a gentleman not far removed from our hospital, on whom this operation was performed. He seemed in just such a condition as the patient whom you have seen, and the operation was perhaps as easily done. There had been two or three successive operations ; and the patient said, “I think I will do handsomely—I will give the operator 100 guineas.” “No,” said the operator ; “my fee is 400 guineas !” He gave his 400 guineas ; and when I sounded him some considerable time afterwards, I found there was still a stone in the bladder, and that the pain had returned, and with it the glairy deposit in the urine. I felt that it would then have been easy to crush the stone.

It is then true, that with the most experienced performers a portion of the stone, like a shell, is apt to remain, and to form the nucleus of another stone. I do not consider this as a great objection to the operation, but it points out to you the necessity of not being too sanguine that you have removed

every part ; and it shews the necessity of again and again examining the bladder, and washing it out carefully.

There is not merely danger of a portion remaining in the bladder, but worse than this—a fragment, such as you have in that bottle, may stick in the orifice of the bladder, or in the lacunæ of the prostate, and then the suffering of the patient is beyond expression. The contraction of the neck of the bladder upon the sharp stone, the inability to discharge the urine, the spasm that takes place in the bladder, and the inflammatory condition of the prostate, are all very serious consequences, and attended with great suffering.

You can the better comprehend all this because you have seen it in my patient. You saw that after the second operation he suffered excessively, from a sort of paroxysm, which implied no more than might have taken place if a very rude hand had forced a large bougie through the prostate. But afterwards he suffered in a different way—viz. from a portion of the stone lodging in the neck of the bladder, so that he had frequent calls to make urine, and purulent and mucous discharge from the neck of the bladder.

In a private patient whom I attended during the progress of the operation, it was necessary to introduce the catheter and inject tepid water, so as to push and wash back the fragment into the bladder, to give temporary relief.

It was on account of this patient's suffering that I got a double catheter made for injecting the bladder. I did not know that this very excellent instrument [presenting it] had been provided and was in the case. I commend this to you for your adoption : it combines the means of holding a portion of the stone, with the uses of a catheter. You can introduce this and inject the bladder, and then allow the bladder to empty itself through this tube ; trusting, that if there be a portion of stone remaining, it will come, by the force of the stream, into the groove, and then you can take hold of it and withdraw it. It is a most ingenious and excellent addition to the other instruments.

At one time our patient had frequent calls to make water, and discharged great quantities of glairy mucus. Those were

the symptoms of the portions sticking near the orifice of the bladder. This mucus you saw tough, hanging from the pot ; and in some cases it is discharged bolt out in a mass, so as to give the patient the sensation of a large body being discharged.

Such is the result of a broken portion of the stone (which is often like the broken shell of an almond), sticking and clinging to the prostate, or entering into the dilated part of the urethra which is within the prostate, obstructing the urine mechanically, and at the same time causing painful spasm.

One operation of crushing will not be sufficient ; nor two, nor three ; it must be repeated again and again, and it is only a small stone which you ought to attempt to crush : you will be baffled by a large stone, and you must acknowledge that when there is a large one it is a case in which it will be necessary to perform lithotomy. When there is a small stone, this operation is safely performed, and with the best success ; but, as I said, not by one operation, but by several. The suffering, I repeat, is not during the operation, but afterwards ; nor must it be concealed that many have died in consequence of this operation. If I have a feeling against the operators, it is from finding there have been deaths undivulged, and not fairly put in balance when the operation has been contrasted with lithotomy.

I believe I have fairly stated to you all that has come to my knowledge—that which I have seen with my eyes and felt with my hands ; keeping out of sight all that has been said in controversy : in fact, I know very little about the controversies which have been entertained on this subject.

In conclusion, then, consider the operation as belonging to your profession, and as a thing you can do with propriety and efficiency, if you know the form and position of the bladder—if you calculate the gravitation and lodgment of the stone, and if you can sound well and safely. All that I have to recommend to you is, that, having crushed the stone, you should see that the fragments are removed, and take care to wash the neck of the bladder during the paroxysm. I believe there is an instrument to slit and open the passage, and allow the stone to escape : it is highly improper to use such an instrument, and the invention of it is only declaring demonstratively the seve-

rity of the suffering from the sticking of the fragments in the passage. On the whole, this is a very important operation—a real accession to our means of giving relief: it brings patients to your hands, when you can do them essential service: it prevents them lingering and hanging off till the stone is too large for the operation of crushing, or even of lithotomy.

I look upon the ingenious inventions exhibited in these instruments [there were many on the table], as promising us means of breaking the stone in the operation of lithotomy. If the operation of lithotomy is to be limited to the cases where the stone is large, then will the character of the operation quickly decline: for there is no accident in lithotomy which, by care and dexterity, may not be obviated, but those which attend the extraction of a large stone, and hardly any contrivance or exercise of ingenuity will mitigate the evil. To do the operation without violence or tearing, is to make it certainly successful; and for this purpose the stone, if large, must be divided, not brought through entire. It is not an operation for display, but to ensure you a better reward than the approbation of a whole theatre of gentlemen, with watches in their hands.

Lithotrity—Vindication of my Clinical Remarks.

SIR,—You did me the honour of giving a report of my Clinical Lecture on “Crushing the Stone in the Bladder.*” The observations of Sir Benjamin Brodie, Baron Heurteloup, M. Civiale, and our late President of the College of Surgeons, [appear to call for some remarks, or, if you choose, apology, for that lecture.

There is a wide difference between the dissertation of a man who is the advocate of a particular measure connected with his own character and success, and the lecture of one sitting before pupils, anticipating their difficulties, and earnestly pointing out to them the occurrences which may befall them, to their extreme mortification, and the injury of their prospects during their first years of practice. I take a more confined view of a clinical lecture than some of my eminent friends, and find it

* See Medical Gazette, vol. xvii. p. 997.

impossible to make it so excursive and so pleasant. An operation is performed : it is our duty to take the occasion, whilst the pupil is animated with interest on account of the scene, to see that it makes a due impression ; and especially to prevent him supposing that that is easily done, the successful practice of which has resulted from the combined endeavours of many members of the profession, and after many disappointments and much ill success.

I can very well conceive Mr Alexander speaking of the operation of extraction of the cataract as a thing very simple and sure of success. Operating many times in a day, and for a succession of years, it is at least very natural that he should represent it as the best, most successful, and easiest to be done,—being so, indeed, in his hands. But would that be the language becoming in a teacher addressing himself to pupils ? Would not the sure consequence be, ill-performed operations, disappointment, and loss of character ? Is it not the duty, then, of one who even pretends to have an interest in his pupils, to tell them what has befallen others—to set before them all the difficulties of the operation, and to contrast the different methods of operating ?

There is a mode of judging of what others are doing, which I think a very fair one. If I go into a cutler's shop, and ask to see the different instruments for lithotomy, and I find this man's gorget, and another man's bistoury—some blunt, some sharp, some cutting on one part of the edge, and some on another ; and more especially if I see a series of instruments that have undergone successive improvements by the same individual ; am I not authorized to interpret this language—am I not entitled to say that the surgeon has felt his way, encountered difficulties, and is here trying to obviate them in future ? If a man, for example, should cut for the stone thirty times with success, by the lateral operation, and yet perform the succeeding operation by cutting above the pubes, he is the most severe commentator on himself ; for were another person to deny the truth of his assertion as to his previous success, or to object to his mode of operating, it would fall short of the severity of criticism that he has inflicted upon himself. It is in this way that I have criticised the operators

in "lithotrity." Already we may find not only in the instrument-makers' shops, but in the pawnbrokers,' an endless variety of instruments for "lithotrity." I see a continual effort, by the multiplication of instruments, to avoid something that has happened. I inquire, and I do find that most formidable accidents have occurred, which it was the duty of some one to promulgate, and which it is the especial duty of an hospital surgeon to notice, and to adduce as warnings to his pupils.

If we look back to the history of our profession, what a lesson it affords us ! Medicines are recommended to the public, and multitudes of successful cases that have been treated by them are brought forward, but in which the physicians have deceived themselves ; the substances to which they have attributed so much virtue being now known to be inert. It is human nature to practise this delusion on itself ; and so instruments are vaunted until their ingenious inventors bring something else forward, stronger, better, and safer ; and then only are the defects of the former acknowledged.

Sir, I have been the advocate of crushing the stone in the bladder. I have shewn the difficulties and dangers of lithotomy, and I have contrasted them with the difficulties and dangers of "lithotrity." Looking upon the subject unbiassed, and as embracing questions paramount to all private considerations, what I have said has been believed.

I have been twitted with referring to an unfortunate accident in the operation of crushing the stone, as if I had with no friendly intention brought forward a mishap that occurred long ago, and ought altogether to have been forgotten. This is my answer ; on the day, and I verily believe the very hour, in which I was delivering my lecture, a similar accident occurred. The instrument being introduced into the bladder, and a stone caught, it was found impossible to crush it, and as impossible to withdraw the instrument ; it was necessary to make a cut in the perineum, and to pick out the stone from the embrace of the instrument. Is it not just that such things should be known ; that the most successful operator, operating with the last improvement of his instruments, meets with these disasters ?

Perhaps in clinical discourse, as well as in writing essays,

we may wander from the practical question ; but when the suffering patient is actually before us, and we are asked an opinion, he must be a bad, as well as a stupid man, who does not concentrate all his energies to the point at issue. I am called in to this patient, in whom the accident last referred to occurred, for the third time, the external wound being closed. I sound him, and find a rough soft stone lying at the neck of the bladder. I have the indescribable advantage of the sound-headed, ingenious, and conscientious surgeon, Mr Copeland, being in consultation. We take all the circumstances into consideration ; they are various and distressing : the patient has suffered this operation of " lithotritry ;" it has been thought to have been successful, and the operator dismissed. We have, after this, sounded, and found a stone : the operation has been attempted again : the instrument has got entangled ; it has been necessary to cut into the perineum ; a small round mulberry calculus has been extracted : after all this, the symptoms have returned—pain in the glans penis, frequent calls to pass urine, disturbed nights, thick tough mucus deposited in the urine : he is again sounded, and an irregular soft mass of stone is discovered in the bladder. The patient is fatigued and dissatisfied with these ineffectual operations ; he would now prefer lithotomy. We think it our duty to dismiss all these untoward circumstances from our minds, to bring home the case, and to say, suppose we ourselves had this calculus, we should desire to have it crushed : we recommend the patient to submit again, and to have the Baron Heurteloup once more called in. May he never have a more severe critic than he has found in me !

As to the main question of the propriety of the operation, when a fit case presented in the hospital, I performed the operation publicly. When I found the proper case under the hands of Baron Heurteloup, I conscientiously recommended him to persevere : in another case, I put my patient in the hands of Mr Costello, and it is my duty to say that the patient perfectly recovered. What is the meaning, then, of this outcry, as if I were illiberally condemning the operation ? What I have said may well have given offence,—that misfortunes

have been improperly concealed ; but in giving them publicity, I have done no more than my duty.

From all the consideration that I have been able to give to this subject, the comparative merits of crushing the stone in the bladder, and of the operation of lithotomy, will never be duly appreciated, until they are both performed in our public hospitals. Then I anticipate that the operation of crushing the stone will be limited to certain conditions, and that lithotomy must be performed in others ; that the history of that greater operation will continue to be the subject of the highest interest in our art ; and this conviction, sir, must be my apology for this long letter. I have the honour to be your very obedient servant,

CHARLES BELL.

FINIS.





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Author Bell, Sir Charles

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